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BUREAU OF STANDARDS
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SUPPLEMENTARY LIST OF PUBLICATIONS OF THE BUREAU OF STANDARDS

JULY 1, 1925, TO JUNE 30, 1926

Reference book not to be
taken from the Library.

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS
George K. Burgess, Director

SUPPLEMENTARY LIST OF PUBLICATIONS OF THE BUREAU OF STANDARDS

(JULY 1, 1925, TO JUNE 30, 1926)

For all previous papers see Circular No. 24 7th ed., June 30, 1925

Issued October 5, 1926

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1926

SUPPLEMENTARY LIST OF PUBLICATIONS OF THE BUREAU OF STANDARDS

July 1, 1925, to June 30, 1926

For all previous papers see Circular No. 24 7th ed., June 30, 1925

This supplementary list is issued annually to supplement the information given in Circular of the Bureau of Standards, No. 24 (7th ed., June 30, 1925): Publications of the Bureau of Standards. This supplement will bring up to date the information listed below under "Contents."

CONTENTS

		Page
I.	Designations of publication series	1
II.	Announcement of new publications	2
III.	Publications not available	2
IV.	Ordering	2
V.	Bound volumes	3
VI.	Technical News Bulletin	4
VII.	Data concerning latest editions of circulars	4
VIII.	Government depository reference libraries	7
IX.	Scientific papers	13
X.	Technologic papers	18
XI.	Circulars	24
XII.	Handbooks	31
XIII.	Simplified practice recommendations	32
XIV.	Building and housing	34
XV.	Miscellaneous publications	35
XVI.	Published papers by the bureau staff printed in outside journals on subjects within the bureaus field of work	37
XVII.	Subject index to new publications	65

I. DESIGNATIONS OF PUBLICATION SERIES

Eight series are issued: S, Scientific Papers; T, Technologic Papers; C, Circulars; H, Handbooks; R, Simplified Practice Recommendations; L, Limitation of Variety Recommendations; BH, Building and Housing; and M, Miscellaneous Publications. The separate papers in each series are numbered consecutively. An initial letter preceding each number shows the particular series; S for Scientific Papers, T for Technologic Papers, etc.—thus T203 is "Technologic Paper No. 203." In referring to publications the series *initial* and the *number* are *both* needed to give complete identification. For information regarding the Technical News Bulletin see page 4.

II. ANNOUNCEMENT OF NEW PUBLICATIONS

A mailing list is maintained to which is sent at regular intervals a card giving titles and prices of new publications issued. Names will be added to this announcement list on request. Notice should be given promptly by those on this list of any change of address, giving the exact form of the old as well as the new address.

One of the objects of this supplement is to list new publications issued after the latest edition of Circular No. 24, Publications of the Bureau of Standards. Such new publications will be listed in the succeeding editions of this supplementary list.

III. PUBLICATIONS NOT AVAILABLE

The publications listed below are not available for distribution by the Bureau of Standards nor for sale by the Superintendent of Documents. They may be consulted at some of the designated depository libraries listed on pages 7 to 12.

Scientific Papers.—S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, S15, S16, S17, S19, S20, S21, S22, S24, S25, S27, S28, S29, S30, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45, S46, S47, S49, S51, S52, S53, S54, S55, S56, S57, S58, S59, S60, S61, S62, S67, S68, S69, S70, S71, S72, S74, S75, S77, S79, S81, S82, S87, S89, S90, S92, S93, S94, S95, S96, S97, S100, S101, S102, S103, S104, S105, S108, S112, S113, S114, S115, S117, S118, S120, S121, S122, S123, S125, S126, S128, S129, S130, S133, S138, S139, S140, S142, S143, S146, S147, S148, S149, S150, S151, S154, S155, S157, S159, S162, S165, S166, S167, S168, S170, S172, S173, S174, S175, S178, S180, S181, S182, S186, S187, S188, S189, S190, S193, S194, S200, S202, S203, S210, S212, S213, S215, S216, S219, S223, S224, S226, S230, S231, S232, S233, S239, S241, S242, S243, S244, S249, S250, S255, S256, S258, S260, S263, S264, S265, S269, S272, S274, S275, S277, S279, S284, S285, S288, S290, S291, S297, S300, S301, S304, S306, S307, S308, S317, S321, S326, S241, S358, S375, S420.

Technologic Papers.—T1, T2, T3, T4, T5, T7, T8, T10, T11, T12, T13, T14, T17, T19, T21, T23, T24, T26, T27, T28, T29, T30, T31, T32, T33, T34, T35, T37, T39, T40, T41, T43, T44, T45, T46, T48, T50, T51, T52, T54, T57, T58, T60, T61, T64, T65, T66, T67, T68, T69, T71, T72, T73, T74, T78, T82, T87, T88, T89, T90, T94, T100, T101, T103, T105, T113, T122, T123, T153, T164, T177, T186, T198.

Circulars.—C2, C4, C5, C7, C8, C9, C11, C12, C14, C15, C21, C22, C23, C28, C29, C34, C36, C37, C39, C41, C45, C49, C50, C54, C57, C59, C72.

Handbooks.—1, 4.

Miscellaneous Publications.—M1, M4, M6, M7, M9, M11, M13, M16, M18, M20, M54.

IV. ORDERING

Any of the publications in Circular No. 24 and this supplementary list, with the exception of those listed under "Publications not available," may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the price indicated. Purchase orders with remittance should be sent to the Su-

perintendent of Documents. (Do not send any such orders or remittances to the Bureau of Standards.)

Order by serial initial, letter and number combined (for example, "Bureau of Standards publication T281"). If initial and number are correctly given, the title is not needed.

All publications are sent out by the Superintendent of Documents, as provided by law, and usually reach destination within a week or two.

For the convenience of the general public coupons (good until used in exchange for Government publications sold by the Superintendent of Documents) may be purchased from his office in sets of 20 for $1.

Terms and Mailing.—(*a*) *Domestic.*—Remittance should be made by coupons, postal money order, express order, or New York draft payable to the "Superintendent of Documents, Government Printing Office, Washington, D. C." Currency may be sent at sender's risk. Postage stamps, defaced or smooth coins, or foreign money positively will not be accepted. Publications are forwarded under Government frank to addresses in the United States and its possessions; also to Mexico and Canada.

(*b*) *Foreign.*—With the exception of Mexico and Canada, include in your remittance, in addition to the price of the publication, about one-third of the price quoted to cover postage. Publications intended for Mexico and Canada will be sent under Government frank. If the amount remitted is in excess of the postage required, the balance will be refunded to you, and if additional postage is required you will be notified.

Kindly make remittance by international money order or New York draft, payable to the "Superintendent of Documents, Government Printing Office, Washington, D. C., U. S. A."

V. BOUND VOLUMES

In addition to the separate papers, both the Scientific and Technologic series are also issued in volumes of about 750 pages each, bound in cloth, consecutively paged, including title page and index. Subscription for either series may be placed in advance with the Superintendent of Documents to receive the bound volume as issued at $2 per volume. See price list on page 4.

The Scientific Papers may be obtained in bound form from volume 1 to 20. (Previous to volume 15 they were called "Reprints" and in the bound form were known as the "Bulletin.")

The Technologic Papers in the bound form begin with volume 16, Technologic Paper No. 203, and in bound form may be obtained up to volume 19. Previous to this they had only been issued as separates.

Price list and subscription basis

		Per volume
(*a*)	Bulletins of the Bureau of Standards, vols. 1–14, inclusive; 1904–1914 (cloth)	$2. 00
(*b*)	Series (*a*) continued—Scientific Papers of the Bureau of Standards, vols. 15–20 (cloth)	2. 00
(*c*)	Unbound separates, reprints of (*b*), sent as issued	1. 25
(*d*)	Technologic Papers of the Bureau of Standards, vols. 16–19 (cloth)	2. 00
(*e*)	Unbound separates of Technologic Papers sent as issued	1. 25

VI. TECHNICAL NEWS BULLETIN

The "Technical News Bulletin" is a monthly publication designed to keep the public informed of the progress of work in the Bureau of Standards. New publications of the bureau issued during the month are listed in this bulletin.

The subscription price is 25 cents per year (United States, Mexico, and Canada); 40 cents per year (Foreign). Mail your subscription with remittance to the Superintedent of Documents, Government Printing Office, Washington, D. C.

VII. DATA CONCERNING LATEST EDITIONS OF CIRCULARS

[Those Marked (*) Are Out of Print and No Longer Available]

Cir. No.	Edition	Date	No. of pages	Price	Cir. No.	Edition	Date	No. of pages	Price
1	2	Oct. 29, 1925	113	50	*29	1	Dec. 31, 1910	13	------
*2	5	Apr. 30, 1915	21	------	30	2	July 6, 1920	25	5
3	3	Dec. 23, 1918	89	15	31	3	Oct. 1, 1914	76	20
*4	2	Jan. 3, 1905	2	------	32	4	Dec. 7, 1920	140	20
*5	3	July 16, 1917	19	5	33	3	Jan. 18, 1917	43	10
6	7	Dec. 30, 1916	30	5	*34	3	May 15, 1915	16	------
*7	5	Oct. 1, 1913	19	------	35	4	Dec. 1, 1919	2	5
*8	3	Aug. 11, 1921	18	------	*36	1	June 30, 1912	26	------
*9	8	Mar. 31, 1916	32	------	37	2	Jan. 1, 1915	13	5
10	4	Jan. 22, 1924	18	5	38	4	Sept. 28, 1921	127	20
*11	3	June 23, 1917	18	------	*39	1	Dec. 16, 1912	14	------
*12 [1]	1	July 16, 1906	7	------	40	3	Sept. 10, 1920	13	5
13	10	Feb. 7, 1923	16	5	*41	3	Sept. 20, 1918	15	5
*14	5	Mar. 20, 1916	17	------	42	2	Aug. 29, 1921	11	5
*15	3	July 1, 1911	7	------	43	2	Jan. 24, 1921	46	10
16	5	July 13, 1922	16	5	44	2	Jan. 30, 1918	196	25
17	3	Mar. 18, 1916	50	15	*45	1	Nov. 1, 1913	89	------
18	2	July 1, 1911	4	5	46	3	Dec. 26, 1922	22	10
19	6	Oct. 31, 1924	72	15	47	1	July 1, 1914	68	15
20	2	May 28, 1915	57	15	47 (supt.) [3]	1	Oct. 27, 1917	10	5
*21	1	Mar. 1, 1910	30	------	48	2	June 10, 1916	202	40
*22	2	May 15, 1911	12	------	*49	2	May 4, 1915	50	------
*23	1	July 15, 1910	93	------	*50	2	June 8, 1917	34	------
24	7	June 30, 1925	271	25	51	1	Dec. 1, 1914	39	15
24 (supt.)	------	July 1, 1926	------	------	52	2	June 28, 1916	44	10
25	8	June 26, 1923	14	5	53	1	Mar. 29, 1915	35	10
25 (supt.) [2]	------	July 1, 1926	------	------	*54 [4]	2	Nov. 15, 1916	323	------
26	4	Apr. 5, 1921	20	5	55	1	Aug. 28, 1915	149	45
27	2	Aug. 9, 1918	41	10	56	2	Sept. 26, 1923	344	60
*28	1	Mar. 1, 1911	19	------	*57 [5]	2	May 11, 1916	64	------

[1] Superseded by C44.
[2] Available free on application to Bureau of Standards.
[3] This is a supplement to circular 47, giving additional information.
[4] Superseded by H3 and H4.
[5] Superseded by C154 and supplement thereto.

VII. DATA CONCERNING LATEST EDITIONS OF CIRCULARS—Continued

Cir. No.	Edition	Date	No. of pages	Price
58	2	June 22, 1923	93	30
*59	1	Apr. 5, 1916	13	------
60	2	Mar. 12, 1920	68	15
61	2	Aug. 31, 1920	44	10
62	3	Jan. 24, 1923	24	5
63	1	May 17, 1917	8	5
64	1	Apr. 20, 1917	6	5
65	1	July 23, 1917	19	5
66	1	July 25, 1917	13	5
67	1	Jan. 17, 1918	5	5
68	1	Oct. 6, 1917	8	5
69	1	Nov. 17, 1917	85	15
70	1	Dec. 5, 1917	259	25
71	1	Sept. 18, 1917	8	5
*72	1	June 17, 1918	84	20
73	2	Nov. 14, 1922	108	20
74	2	Mar. 10, 1924	345	60
75	1	Jan. 10, 1918	127	15
76	1	Apr. 21, 1919	120	20
77	1	Mar. 10, 1919	67	10
78	2	Mar. 20, 1923	14	5
79	2	Jan. 19, 1923	62	15
80	2	Sept. 2, 1922	34	20
81	2	Dec. 21, 1922	32	10
82	2	June 8, 1922	9	5
83	1	Jan. 31, 1920	35	5
84	2	July 3, 1922	8	5
85	2	-----do------	9	5
86	2	Oct. 6, 1922	11	5
87	2	July 3, 1922	8	5
88	2	-----do------	8	5
89	2	-----do------	10	5
90	2	May 23, 1922	8	5
91	2	June 21, 1922	8	5
92	1	June 7, 1920	94	30
93	2	June 21, 1922	9	5
94	2	July 7, 1922	8	5
95	2	Mar. 5, 1925	32	10
96	1	June 15, 1920	5	5
97	3	July 3, 1922	10	5
98	2	Feb. 28, 1923	10	5
99	1	Nov. 12, 1920	44	10
100	2	May 9, 1924	162	40
101	2	Apr. 23, 1924	204	40
102	2	Sept. 22, 1922	5	5
103	3	July 22, 1922	6	5
104	2	Jan. 30, 1923	7	5
105	2	Sept. 18, 1922	4	5
106	1	Nov. 24, 1920	15	5
107	1	Feb. 12, 1921	37	10
108	1	Jan. 3, 1921	21	5
109	1	-----do------	9	5
110	1	Feb. 26, 1921	8	5
111	2	June 24, 1922	8	5
112	1	June 24, 1921	214	65
113	2	July 7, 1922	104	25
114	2	Apr. 17, 1925	10	5
115	2	Mar. 30, 1925	13	5
116	1	Aug. 17, 1921	5	5
117	2	July 3, 1922	6	5
118	1	Dec. 8, 1921	7	5
119	1	Feb. 6, 1922	3	5
120	1	Apr. 24, 1922	16	5
121	1	July 17, 1922	14	5
122	2	Sept. 12, 1923	16	5
123	2	Feb. 1, 1924	5	5
124	1	July 27, 1922	4	5
125	1	-----do------	3	5
126	1	-----do------	5	5
127	1	-----do------	4	5
128	2	Feb. 1, 1924	5	5
129	1	July 27, 1922	4	5
130	1	-----do------	5	5
131	1	-----do------	5	5
132	2	Feb. 1, 1924	4	5
133	1	Nov. 10, 1922	21	10
134	2	June 30, 1924	6	5
135	1	Oct. 16, 1922	14	5
136	2	Jan. 12, 1924	4	5
137	1	Feb. 23, 1923	19	10
138	1	Mar. 21, 1923	33	10
139	1	June 15, 1923	9	5
140	1	Mar. 26, 1923	6	5
141	1	Mar. 24, 1923	18	10
142	1	Apr. 16, 1923	48	15
143	1	June 25, 1923	5	5
144	1	July 6, 1923	7	5
145	1	Jan. 28, 1924	72	15
146	1	Sept. 25, 1923	6	5
147	1	Sept. 19, 1923	8	5
148	1	Oct. 10, 1923	9	5
149	1	Feb. 1, 1924	5	5
150	1	Dec. 28, 1923	6	5
151	1	Jan. 9, 1924	66	15
152	1	Dec. 8, 1923	7	5
153	1	Dec. 27, 1923	7	5
154	1	May 29, 1924	175	30
154 (supt.)[1]	1	Oct. 8, 1925	4	5
155	1	Apr. 8, 1924	11	5
156	1	Mar. 1, 1924	4	5
157	1	Apr. 8, 1924	10	5
158	1	Mar. 25, 1924	3	5
159	1	Apr. 8, 1924	10	5
160	1	-----do------	9	5
161	1	Mar. 1, 1924	5	5
162	1	Apr. 8, 1924	7	5
163	1	Feb. 20, 1924	11	5
164	1	June 4, 1924	12	5
165	1	June 21, 1924	11	5
166	1	Sept. 18, 1924	5	5
167	1	July 12, 1924	5	5
168	1	July 7, 1924	10	5
169	1	Aug. 12, 1924	37	10
170	1	July 8, 1924	3	5
171	1	-----do------	3	5
172	1	-----do------	3	5
173	1	-----do------	3	5
174	1	-----do------	4	5
175	1	-----do------	3	5
176	1	-----do------	3	5
177	1	-----do------	3	5
178	1	-----do------	3	5
179	1	-----do------	3	5
180	1	-----do------	3	5
181	1	-----do------	3	5
182	1	July 23, 1924	4	5
183	1	Aug. 2, 1924	4	5

[1] Abridged volume correction table for petroleum oils.

VII. DATA CONCERNING LATEST EDITIONS OF CIRCULARS—Continued

Cir. No.	Edition	Date	No. of pages	Price
184	1	Aug. 2, 1924	2	5
185	1	----do----	3	5
186	1	July 25, 1924	4	5
187	1	Aug. 2, 1924	3	5
188	1	----do----	4	5
189	1	Aug. 19, 1924	5	5
190	1	Sept. 4, 1924	4	5
191	1	----do----	6	5
192	1	Oct. 9, 1924	5	5
193	1	Jan. 9, 1925	5	5
194	1	----do----	6	5
195	1	----do----	5	5
196	1	----do----	3	5
197	1	----do----	4	5
198	1	Feb. 3, 1925	8	5
199	1	Mar. 7, 1925	19	10
200	1	Feb. 7, 1925	4	5
201	1	Feb. 17, 1925	5	5
202	1	Mar. 25, 1925	16	5
203	1	Mar. 6, 1925	4	5
204	1	Mar. 23, 1925	7	5
205	1	Mar. 7, 1925	5	5
206	1	Apr. 16, 1925	6	5
207	1	Apr. 1, 1925	6	5
208	1	May —, 1925	37	15
209	1	Apr. 30, 1925	4	5
210	1	May 2, 1925	3	5
211	1	Apr. 30, 1925	3	5
212	1	May 9, 1925	5	5
213	1	May 8, 1925	5	5
214	1	May 21, 1925	4	5
215	1	May 9, 1925	12	5
216	1	----do----	9	5
217	1	May 22, 1925	2	5
218	1	----do----	2	5
219	1	----do----	2	5
220	1	----do----	2	5
221	1	----do----	2	5
222	1	----do----	2	5
223	1	----do----	2	5
224	1	----do----	2	5
225	1	----do----	2	5
226	1	----do----	2	5
227	1	----do----	3	5
228	1	----do----	3	5
229	1	May 26, 1925	4	5
230	1	----do----	3	5
231	1	June 11, 1925	4	5
232	1	July 6, 1925	42	10
233	1	June 15, 1925	3	5
234	1	----do----	3	5
235	1	----do----	4	5
236	1	----do----	3	5
237	1	----do----	3	5
238	1	----do----	3	5
239	1	----do----	2	5
240	1	----do----	3	5
241	1	----do----	4	5
242	1	----do----	3	5
243	1	----do----	3	5
244	1	----do----	3	5
245	1	June 13, 1925	3	5
246	1	June 11, 1925	3	5
247	1	June 13, 1925	3	5
248	1	----do----	3	5
249	1	----do----	3	5
250	1	June 11, 1925	3	5
251	1	June 13, 1925	3	5
252	1	----do----	2	5
253	1	June 11, 1925	3	5
254	1	June 13, 1925	3	5
255	1	June 20, 1925	2	5
256	1	June 18, 1925	4	5
257	1	June 26, 1925	3	5
258	1	June 20, 1925	3	5
259	1	June 26, 1925	5	5
260	1	----do----	3	5
261	1	----do----	3	5
262	1	----do----	3	5
263	1	----do----	3	5
264	1	June 20, 1925	3	5
265	1	June 26, 1925	5	5
266	1	----do----	5	5
267	1	June 20, 1925	3	5
268	1	July 7, 1925	3	5
269	1	----do----	4	5
270	1	June 26, 1925	5	5
271	1	July 18, 1925	7	5
272	1	July 7, 1925	4	5
273	1	----do----	4	5
274	1	----do----	4	5
275	1	Aug. 29, 1925	47	15
276	1	Aug. 5, 1925	28	20
277	1	July 7, 1925	4	5
278	1	----do----	4	5
279	1	Dec. 3, 1925	85	25
280	1	Oct. 29, 1925	9	5
281	1	Jan. 22, 1926	81	30
282	1	Feb. 20, 1926	50	25
283	1	Mar. 2, 1926	52	20
284	1	Nov. 18, 1925	3	5
285	1	Nov. 7, 1925	6	5
286	1	Nov. 17, 1925	4	5
287	1	----do----	5	5
288	1	Nov. 18, 1925	3	5
289	1	----do----	3	5
290	1	----do----	3	5
291	1	----do----	4	5
292	1	----do----	4	5
293	1	Dec. 1, 1925	8	5
294	1	Nov. 17, 1925	5	5
295	1	Jan. 16, 1926	3	5
296	1	Nov. 18, 1925	20	10
297	1	Dec. 1, 1925	5	5
298	1	----do----	6	5
299	1	Jan. 14, 1926	8	5
300	1	Feb. 25, 1926	9	5
301	1	Feb. 5, 1926	4	5
302	1	Feb. 9, 1926	6	5
303	1	----do----	7	5
304	1	June 11, 1926	49	20
305	1	Mar. 1, 1926	3	5
306	1	Apr. 1, 1926	3	5
307	1	Apr. 19, 1926	3	5
308	1	----do----	3	5

VIII. GOVERNMENT DEPOSITORY REFERENCE LIBRARIES

Congress designates in the several congressional districts certain libraries as "Government depository libraries." These are entitled to receive any or all groups of Government publications on the understanding that they are kept available for consultation by the general public.

In case the Superintendent of Documents or the Bureau of Standards receives a request for a publication which can no longer be supplied, the correspondent is referred to the nearest depository reference library at which this publication can be consulted.

The following libraries (arranged by States) maintain reference files of bureau publications. Except where marked "Complete," initial letters indicate the series which are available:

S, Scientific Papers.
T, Technologic Papers.
C, Circulars.
H, Handbooks.
A, Annual reports.
W, Reports of Weights and Measures Conferences.
M, Miscellaneous publications.

4346°—26——2

Location	Library	Publications received
ALABAMA		
Auburn	Alabama Polytechnic Institute.	STCAWM.
Birmingham	Howard College	STHWM.
	Public	Complete.
Montgomery	State Capitol	Do.
Tuskegee Institute.	Tuskegee Institute	STCH.
University	University of Alabama.	Complete.
ALASKA		
Fairbanks	Alaska Agricultural College and School of Mines.	Complete.
Juneau	Alaska Historical Library and Museum	SW.
ARIZONA		
Phoenix	Arizona State	A.
	Phoenix Public	STC.
Tucson	University of Arizona.	Complete.
ARKANSAS		
Conway	Hendrix College	STCHWM.
Fayetteville	University of Arkansas.	STCAWM.
Jonesboro	State Agricultural School.	ST.
CALIFORNIA		
Berkeley	University of California.	Complete.
Claremont	Pomona College	Do.
Eureka	Eureka Free	Do.
Fresno	Fresno County Free.	Do.
Los Angeles	Los Angeles Public.	Do.
Oakland	Oakland Free	Do.
Riverside	Riverside Public	Do.
Sacramento	California State	Do.
	City Free	Do.
San Diego	San Diego Public	Do.
San Francisco	Mechanics Mercantile.	STCHM.
	San Francisco Public.	Complete.
Stanford University.	Leland Stanford, jr., University.	Do.
Stockton	Stockton Free Public.	STCHM.
COLORADO		
Boulder	University of Colorado.	Complete.
Colorado Springs	Colorado College	Do.
Denver	Colorado State	Do.
	Public	Do.
	Regis College	SA.
	University of Denver.	Complete.
Fort Collins	State Agricultural College.	Do.
Pueblo	McClelland Public.	TC.
CONNECTICUT		
Bridgeport	Bridgeport Public.	Complete.
Hartford	Connecticut State	Do.
	Trinity College	STCAW.
Middletown	Wesleyan University.	Complete.
New Haven	Yale University	Do.
Storrs	Connecticut Agricultural College.	STCHWM.
Waterbury	Silas Bronson	STCH.
DELAWARE		
Dover	Delaware State	SA.
Newark	University of Delaware.	STCA.
Wilmington	Wilmington Institute Free.	Complete.
DISTRICT OF COLUMBIA		
Washington	Department of Agriculture.	Do.
	Department of Interior.	Do.
	Department of Justice.	HA.
	Navy Department	STCHW.
	Treasury Department.	A.
FLORIDA		
De Land	John B. Stetson University.	STA.
Gainesville	University of Florida.	Complete.
Jacksonville	Jacksonville Public.	STCHWM.
Winter Park	Rollins College	S.
GEORGIA		
Athens	University of Georgia.	Complete.
Atlanta	Carnegie	Do.
	Georgia State	W.
Savannah	Savannah Public	STC.
HAWAII		
Honolulu	University of Hawaii.	Complete.
IDAHO		
Boise	Idaho State	STAM.
Moscow	University of Idaho.	Complete.
Pocatello	Idaho Technical Institute.	Do.
ILLINOIS		
Belleville	Belleville Public	STC.
Bloomington	Illinois Wesleyan University.	Complete.
Chicago	Chicago Public	Do.
	John Crerar	Do.
	Newberry	H.
	St. Ignatius High School.	STAM.
	University of Chicago.	Complete.
Danville	Danville Public	S.
Evanston	Northwestern University.	STCAWM.
Freeport	Freeport Public	STCHAW.
Galesburg	Free Public	Complete.
Jacksonville	Jacksonville Public.	Do.
Lisle	St. Procopius College.	ST.
McLeansboro	Mary E. C. McCoy Memorial.	Complete.
Monmouth	Monmouth College.	STA.
Normal	Illinois State Normal University.	Complete.
Peoria	Peoria Public	Do.
Rockford	Public	STCHWM.
Springfield	Illinois State	Complete.
Urbana	University of Illinois.	Do.

Location	Library	Publications received
INDIANA		
Bloomington	Indiana University.	Complete.
Crawfordsville	Wabash College	Do.
Fort Wayne	Public	Do.
Greencastle	Depauw University.	Do.
Hanover	Hanover College	STC.
Indianapolis	Indiana State	Complete.
	Indianapolis Public.	Do.
La Fayette	Purdue University.	Do.
Merom	Union Christian College.	STA.
Muncie	Public	STCHWM.
Notre Dame	University	Complete.
Richmond	Morrison Reeves	STC.
Terre Haute	Indiana State Normal.	Complete.
IOWA		
Ames	Iowa State College.	Complete.
Council Bluffs	Free Public	STH.
Des Moines	Iowa State	STCHAW.
	Public	STCHAM.
Dubuque	Carnegie-Stout Free Public.	T.
Fairfield	Fairfield Free Public.	Complete.
Fayette	Upper Iowa University.	STH.
Grinnell	Grinnell College	Complete.
Iowa City	State University of Iowa.	Do.
Mount Pleasant	Iowa Wesleyan College.	SCW.
Mount Vernon	Cornell College	STM.
Sioux City	Sioux City Public	Complete.
KANSAS		
Baldwin	Baker University	Complete.
Emporia	Kansas State Teachers College.	STC.
Lawrence	University of Kansas.	Complete.
Manhattan	Kansas State Agricultural College.	Do.
Pittsburg	Pittsburg Public	Do.
Topeka	Kansas State	STCWM.
KENTUCKY		
Danville	Center College	Complete.
Glasgow	Glasgow Library Association.	SH.
Henderson	Henderson Public.	Complete.
Lexington	University of Kentucky.	Do.
Louisville	Louisville Free Public.	Do.
Murray	Murray State Normal School.	CAW.
Somerset	Carnegie Public	ST.
Winchester	Kentucky Wesleyan College.	STCHAM.
LOUISIANA		
Baton Rouge	Louisiana State University.	Complete.
Natchitoches	State Normal School.	STA.
New Orleans	Howard Memorial.	STWM.
	Louisiana State Museum.	Complete.
	New Orleans Public.	Do.
	Tulane University	Do.
Shreveport	Shreveport Memorial.	Do.

Location	Library	Publications received
MAINE		
Augusta	Maine State	STCHWM.
Brunswick	Bowdoin College	Complete.
Lewiston	Bates College	STCAM.
Orono	University of Maine.	Complete.
Portland	Portland Public	Do.
Saco	Dyer	STCH.
Waterville	Colby College	STC.
MARYLAND		
Annapolis	Maryland State	A.
	United States Naval Academy.	ST.
Baltimore	Baltimore City	Complete.
	Enoch Pratt Free	Do.
	Johns Hopkins University.	Do.
	Peabody Institute	Do.
Chestertown	Washington College.	STCW.
Westminster	Western Maryland College.	ST.
MASSACHUSETTS		
Amherst	Amherst College	Complete.
	Massachusetts Agricultural College.	Do.
Boston	Boston Public	Do.
	State Library of Massachusetts.	Do.
Cambridge	Harvard College	Do.
Lynn	Lynn Public	STCAWM
New Bedford	Public	TCHA.
Salem	Essex Institute	STA.
Tufts College	Tufts College	STCA.
Williamstown	Williams College	Complete.
Worcester	American Antiquarian Society.	Do.
	Free Public	Do.
MICHIGAN		
Ann Arbor	University of Michigan.	Complete.
Battle Creek	Public	W.
Detroit	Detroit College	T.
	Public	Complete.
East Lansing	Michigan State Agricultural College.	Do.
Grand Rapids	Grand Rapids Public.	Do.
Houghton	Michigan College of Mines.	Do.
Kalamazoo	Public	Do.
Lansing	Michigan State	Do.
Muskegon	Hackley Public	STCAW.
Orchard Lake	Polish Seminary	STCHAM.
Port Huron	Public	Complete.
Saginaw	Hoyt Public	Do.
MINNESOTA		
Duluth	Duluth Public	STC.
Fergus Falls	Carnegie Public	H.
Minneapolis	Public	Complete.
	University of Minnesota.	Do.
St. Paul	Minnesota Historical Society.	A.
	Minnesota State	Complete.
	St. Paul Public	Do.
MISSISSIPPI		
Agricultural College.	Mississippi Agricultural and Mechanical College.	Complete.
Greenville	Greenville Public	Do.

Location	Library	Publications received
MISSOURI		
Cape Girardeau	State Teachers' College.	Complete.
Columbia	University of Missouri.	Do.
Fulton	Westminster College.	Do.
Jefferson City	Missouri State	ST.
Kansas City	Kansas City Public.	Complete.
	Rockhurst College	STCHWM.
Liberty	William Jewell College.	Complete.
Rolla	Missouri School of Mines.	STCWM.
St. Joseph	St. Joseph Public	STCHW.
St. Louis	St. Louis Public	Complete.
	St. Louis University.	Do.
	Washington University.	Do.
Springfield	Drury College Library.	STCHWM.
Warrensburg	Central Missouri State Teachers College.	SCHAW.
MONTANA		
Bozeman	Montana State College.	Complete.
Butte	Montana State School of Mines.	Do.
Helena	Helena Public	Do.
	Historical Society of Montana.	Do.
Lewistown	Fergus County High School.	STCAM.
Missoula	State University	Complete.
NEBRASKA		
Blair	Dana College	T.
Fremont	Midland College	STCWM.
Lincoln	Nebraska State University of Nebraska.	Complete.
Omaha	Omaha Public	Do.
NEVADA		
Carson City	Nevada State	STAM.
Reno	University of Nevada.	Complete.
NEW HAMPSHIRE		
Concord	New Hampshire State.	STA.
Durham	New Hampshire State College.	STCHAW.
Hanover	Dartmouth College.	Complete.
Laconia	Laconia Public	STC.
Manchester	City	Complete.
NEW JERSEY		
Atlantic City	Free Public	STCHWM.
Bayonne	do	Do.
Camden	Camden Free Public.	STC.
Elizabeth	Public	Complete.
Jersey City	Free Public	Do.
Newark	do	Do.
New Brunswick	do	Do.
	Rutgers College	Do.
Princeton	Princeton University.	Do.
Trenton	Free Public	STCHAM.
	New Jersey State	Complete.
NEW MEXICO		
Albuquerque	University of New Mexico.	Complete.
East Las Vegas	New Mexico Normal University.	Do.
State College	New Mexico College of Agriculture and Mechanical Arts.	Do.
NEW YORK		
Albany	New York State	Do.
Brooklyn	Brooklyn Public	Do.
	Pratt Institute Free.	Do.
Buffalo	Buffalo Public	Do.
	Grosvenor	Do.
Canton	St. Lawrence University.	STCAWM.
Glens Falls	Crandall Free	ST.
Hamilton	Colgate University.	Complete.
Ithaca	Cornell University.	Do.
Keuka Park	Keuka College	S.
Newburgh	Newburgh Free	ST.
New York	College of the City of New York.	Complete.
	Columbia University.	Do.
	New York Public, Astor Branch.	Do.
	New York Public, Lenox Branch.	Do.
	New York University.	Do.
	The New York World.	A.
Poughkeepsie	Adriance Memorial.	ST.
Rochester	Rochester University.	Complete.
Schenectady	Union College	Do.
Syracuse	Syracuse University.	Do.
Troy	Troy Public	Do.
Utica	Utica Public	STC.
NORTH CAROLINA		
Chapel Hill	University of North Carolina.	Complete.
Durham	Trinity College	Do.
Newton	Catawba College	STC.
Raleigh	North Carolina State College of Agriculture and Engineering.	Complete.
	North Carolina State.	Do.
Wake Forest	Wake Forest College.	S.
Washington	Public Schools	Do.
NORTH DAKOTA		
Agricultural College.	North Dakota Agricultural College.	STCAW.
Bismarck	North Dakota State.	TC.
University	State University of North Dakota.	Complete.
Valley City	State Teachers College.	STCW.

Location	Library	Publications received
OHIO		
Alliance	Mount Union College.	Complete.
Athens	Ohio University	STA.
Chillicothe	Public	STH.
Cincinnati	do	Complete.
Cleveland	Western Reserve University.	Do.
	Case	Do.
	Cleveland Public	Do.
Columbus	Columbus Public	Do.
	Ohio State	Do.
	Ohio State University.	Do.
Dayton	Dayton Public	Do.
Delaware	Ohio Wesleyan University.	STCHAW.
Gambier	Kenyon College	Complete.
Granville	Denison University.	STAM.
Hiram	Hiram College	STCAWM.
Marietta	Marietta College	Complete.
Oberlin	Oberlin College	Do.
Oxford	Miami University	Do.
Sidney	Sidney Public	STCM.
Springfield	Warder Public	Complete.
Toledo	Toledo Public	Do.
Van Wert	Brumback	STCHM.
Youngstown	Reuben McMillan Free.	Do.
OKLAHOMA		
Ada	East Central State Normal School.	ST.
Alva	Northwestern State Teachers College.	STHA.
Enid	Enid Carnegie	STCHM.
Miami	Miami Public	T.
Norman	University of Oklahoma.	Complete.
Oklahoma City	Oklahoma State	STCAW.
Stillwater	Oklahoma Agricultural and Mechanical College.	Complete.
Tahlequah	Northeastern State Teachers College.	STCA.
OREGON		
Corvallis	Oregon Agricultural College.	TCHAWM.
Eugene	University of Oregon.	Complete.
Forest Grove	Pacific University	STCH.
Portland	Library Association of Portland.	Complete.
	Reed College	Do.
Salem	Oregon State	Do.
PENNSYLVANIA		
Bethlehem	Lehigh University	STCHAW.
Bradford	Carnegie Public	STCA.
Erie	Erie Public	STCW.
Gettysburg	Gettysburg College.	STC.
Harrisburg	Pennsylvania State.	Complete.
Haverford	Haverford College.	STCAWM.
Huntingdon	Juniata College	S.
Lancaster	Franklin and Marshall College.	S.
Meadville	Allegheny College	ST.
PENNSYLVANIA—continued		
Philadelphia	Free	Complete.
	Library Company of Philadelphia, Ridgway Branch.	Do.
	Mercantile	S.
	Philadelphia Museum.	STCHWM
	University of Pennsylvania.	Complete.
Pittsburgh	Carnegie Free of Allegheny.	STCH.
	Carnegie	Complete.
	University of Pittsburgh.	Do.
Scranton	Scranton Public	STHAM.
State College	Pennsylvania State College.	Complete.
Swarthmore	Swarthmore College.	Do.
Warren	Warren Library Association.	STH.
Washington	Washington and Jefferson College.	Complete.
Wilkes-Barre	Wyoming Historical and Geological Society.	STCWM.
Williamsport	James V. Brown	ST.
PHILIPPINE ISLANDS		
Manila	Philippine Library and Museum.	Complete.
RHODE ISLAND		
Kingston	Rhode Island State College.	Complete.
Providence	Brown University	Do.
	Providence Public	Do.
	Rhode Island State	Do.
Westerly	Westerly Public	H.
SOUTH CAROLINA		
Charleston	Charleston College.	STH.
	Charleston Library Society.	ST.
Clemson College.	Clemson Agricultural College.	Complete.
Clinton	Presbyterian College of South Carolina.	Do.
Columbia	University of South Carolina.	STCAWM.
Rockhill	Winthrop College	A.
SOUTH DAKOTA		
Brookings	South Dakota State College.	Complete.
Huron	Huron College	S.
Mitchell	Dakota Wesleyan University.	ST.
Pierre	South Dakota State	ST.
Sioux Falls	Carnegie Free Public.	STCHA.
Vermilion	University of South Dakota.	Complete.
Yankton	Yankton College	SAM.

Location	Library	Publications received
TENNESSEE		
Chattanooga	Chattanooga Public.	Complete.
Johnson City	Wayne Williams Public.	Do.
Knoxville	University of Tennessee.	Do.
McKenzie	Bethel College	C.
Memphis	Cossitt	Complete.
Murfreesboro	Middle Tennessee State Normal.	STCAW.
Nashville	Carnegie Library	Complete.
	Vanderbilt University.	Do.
TEXAS		
Austin	Texas State	Complete.
	University of Texas.	Do.
Clarendon	Clarendon College	S.
College Station	Agricultural and Mechanical College.	Complete.
Dallas	Dallas Public	STCAW.
El Paso	Public	Complete.
Fort Worth	Carnegie Public	Do.
	Texas Christian University.	Do.
Galveston	Rosenberg	Do.
Georgetown	Southwestern University.	Do.
Houston	Houston Public	Do.
San Antonio	Carnegie	ST.
Waco	Baylor	Complete.
UTAH		
Ephraim	Snow College	Complete.
Logan	Utah Agricultural College.	Do.
Ogden	Carnegie Free	STCHAM.
Provo	Brigham Young University.	Complete.
Salt Lake City	University of Utah.	Do.
VERMONT		
Burlington	University of Vermont.	Complete.
Middlebury	Middlebury College.	Do.
Montpelier	Vermont State	Do.
Northfield	Norwich University.	Do.
VIRGINIA		
Blacksburg	Virginia Polytechnic Institute.	Complete.
Bridgewater	Bridgewater College.	STA.
Emory	Emory and Henry College.	S.
VIRGINIA—con.		
Lexington	Virginia Military Institute.	Complete.
	Washington and Lee University.	Do.
Richmond	Virginia State	Do.
Salem	Roanoke College	Do.
University	University of Virginia.	Do.
University of Richmond.	University of Richmond.	ST.
WASHINGTON		
Everett	Everett Public	SCHAM.
Olympia	Washington State	STCH.
Pullman	State College of Washington.	Complete.
Seattle	Seattle Public	Do.
	University of Washington.	Do.
Spokane	Spokane Public	Do.
Tacoma	Tacoma Public	STCHWM.
Walla Walla	Whitman College	Complete.
WEST VIRGINIA		
Athens	Concord State Normal School.	SCWM.
Charleston	State	Complete.
Fairmont	Fairmont State Normal.	ST.
Institute	West Virginia Collegiate Institute.	Complete.
Montgomery	New River State School.	SA.
Morgantown	West Virginia University.	Complete.
WISCONSIN		
Appleton	Lawrence College	ST.
Beloit	Beloit College	Complete.
Eau Claire	Eau Claire Public	STCAWM.
Fond du Lac	Fond du Lac Public.	SW.
La Crosse	La Crosse Public	A.
Madison	State Historical Society.	Complete.
State		CHAW.
Milwaukee	Milwaukee Public.	Complete.
Racine	Racine Public	Do.
Superior	Superior Public	ST.
WYOMING		
Cheyenne	Wyoming State	STCHWM.
Laramie	University of Wyoming.	Complete.

IX. SCIENTIFIC PAPERS

S509. Alternating Current Distribution in Cylindrical Conductors--Chester Snow

General theory of propagation of periodic waves along parallel cylindrical conductors and dielectrics. The existence and uniqueness of scalar and vector potentials is proven and their properties examined by the construction of a generalized Green's function and an analogous magnetic flux function. From the formal solutions, the physical concepts, coefficients of leakage, capacity, resistance, and inductance, and the propagation constant are given as functions of the frequency which reduce to the ordinary constants in case the frequency is so low or the cross section of the conductors so small that the current distribution is practically uniform in each section. High-frequency formulas are obtained for these quantities in the case of two unequal circular cylinders having different electrical constants. (July 24, 1925.) pp. 62. Price, 10 cents.

S510. Effect of Wear on the Magnetic Properties and Tensile Strength of Steel Wire----Raymond L. Sanford, Walter L. Cheney, and James M. Barry

In order to design intelligently apparatus for the magnetic testing of wire hoisting rope, it is necessary to have a knowledge of the fundamental principles involved. This paper describes experiments to determine the effect of wear on the magnetic properties and tensile strength of steel wire of the kind used in the manufacture of wire rope. It was found that the magnetic properties of the wire were altered by wear and that this change was accompanied by an increase in tensile strength. (July 24, 1925.) pp. 6. Price, 5 cents.

S511. A Nonintermittent Sensitometer (Time-Scale Exposure Machine) with Clock Controlled Motor Drive----------Raymond Davis

The sensitometer described contains a gear driven sector wheel with which the time-scale exposures are made, during a single revolution. The sector wheel may be run at a wide range of speeds by power-of-two steps. A new arrangement of the sector apertures is shown and the method of construction and calibration is discussed. The speed of the motor which runs the apparatus is controlled by a clock so the precision is obtained in the exposure time. The method used and the electrical circuits are given in this paper. (Aug. 20, 1925.) pp. 26. Price, 15 cents.

S512. Temperature Estimates of the Planet Mars----------W. W. Coblentz

This paper gives the results of an investigation of four methods of estimating planetary temperatures, especially of Mars, from radiometric measurements using transmission screen of water, quartz, glass and fluorite (see B. S. Sci. Papers Nos. 438 and 460).

The results obtained are concordant in showing that the bright areas on Mars are cooler than the dark areas, and that the sunset side of the planet is hotter than the sunrise side. The following temperatures were deduced at opposition (August 21, 1924); equatorial bright areas -10 to $+5°$ C., dark areas 10 to 20° C., north polar region $-70°$ C., south polar region 0 to 10° C., east limb 45° C., west limb 0° C., whole disk 30° C., night side below $-70°$ C. (Sept. 22, 1925.) pp. 27. Price, 10 cents.

S513. Origin of Quenching Cracks.....Howard Scott

The causes of quenching cracks incident to the hardening of tool steels are examined both analytically and experimentally. The results indicate practical expedients for the avoidance of quenching cracks. (Sept. 25, 1925.) pp. 46 Price, 20 cents.

S514. Gases in Metals: II. The Determination of Oxygen and Hydrogen in Metals by Fusion in Vacuum.....Louis Jordan and James R. Eckman

A study was made of three types of vacuum fusion methods for determining gases in ferrous metals, viz, fusion of the metal (*a*) in a refractory oxide crucible, (*b*) with an alloy of antimony and tin, and (*c*) in a graphite crucible. The method finally selected as the most satisfactory procedure for determining oxygen and hydrogen in pure iron steels and cast irons was that of fusion in graphite. Metal samples contained in an evacuated fused silica tube were melted by high-frequency induction heating. A train of solid absorbents for the determination of H_2O, CO_2, CO, and H_2 was developed, tested, and used for the gravimetric determination of total oxygen and hydrogen evolved from the fused sample. (Oct. 9, 1925.) pp. 38. Price, 10 cents.

S515. Thermal Expansion of Tungsten.....Peter Hidnert and W. T. Sweeney

This paper gives the results of an investigation on the thermal expansion of tungsten (99.98 per cent) over various temperature ranges between −100 and +500° C. A summary of available data by previous observers on the thermal expansion of tungsten is included. The expansion of tungsten is given by the following empirical equation:

$$L_t = L_o\,[1 + (4.28\,t + 0.00058\,t^2)10^{-6}]$$

where L_t represents the length of the metal at any temperature t between −105 and +502° C., and L_o the length at 0° C. Average coefficients of expansion for various temperature ranges are given in a table. (Dec. 1, 1925.) pp. 5. Price 5 cents.

S516. A Shielded Resistor for Voltage Transformer Testing..Francis B. Silsbee

The equipment and method used at the Bureau of Standards for the precise testing of voltage transformers up to 30,000 volts is described in detail. A general discussion of the various errors which may arise in apparatus of this type as a result of capacitance between the various parts is included, together with suggestions as to other applications and limitations of shielded resistors. (Dec. 2, 1925.) pp. 26. Price, 15 cents.

S517. A Special Camera for Photographing Cylindrical Surfaces..Raymond Davis

This paper describes a camera designed for photographing the entire outside surface of short lengths of pipe which had been subjected to soil corrosion tests.

The pipe is rotated by means of a belt which is driven by a pulley of the camera The film moves at speed equal to that of the image of the pipe. An automatic switch stops the camera after the complete surface of the pipe has been photographed. In this way a picture of the entire surface is obtained in one piece. The design is applicable to the photographing of other cylindrical objects. (Dec. 5, 1925.) pp. 12. Price, 10 cents.

S518. Metallographic Etching Reagents, III; For Alloy Steels
Edward C. Groesbeck

There has been lacking in the literature a rationale, which would guide one in making an intelligent selection of a suitable etching solution for identifying, by means of metallographic etching methods, the constituents present in various alloy steels, ferroalloys, and special alloys. This investigation was undertaken, with the object of furnishing such a rationale for alloy steels containing chromium, tungsten, and vanadium. Experimental data on the etching behavior of typical

constituents, found present in these steels and ferroalloys, and in high-speed steels, toward various alkaline solutions were obtained. The principles governing this behavior were determined from these data, and results of tests made with certain solutions. A differentiation of the various constituents is thus made possible. (Dec. 11, 1925.) pp. 60. Price, 25 cents.

S519. The Preparation of Levulose

Richard F. Jackson, Clara Gillis Silsbee, and Max J. Proffitt

It is demonstrated that levulose, the sweetest member of the sugar group, can be prepared at moderate cost from the Jerusalem artichoke or the dahlia. Artichoke juices are, immediately upon extraction, acidified with sulphuric or hydrochloric acid and converted by heating to 70 or 80 °C. for 30 to 45 minutes. Lime is then added to very slight alkalinity, neutralizing the acid and defecating the juice. From juices of sufficiently high purity levulose may be crystallized directly. From impure juices levulose may be isolated in the form of its insoluble compound with lime. By the latter process sirups of 94 per cent purity may be obtained. Crystallization, which has hitherto necessitated the use of expensive organic reagents, is accomplished directly from aquenous sirups. (Jan. 12, 1926.) pp. 31. Price, 10 cents.

S520. Nonflammable Liquids for Cryostats——**C .W. Kanolt**

Several very serious accidents have occurred in laboratories as the result of the use of flammable liquids in cryostats, in which a liquid of low-freezing point is required. In some instances burning liquid has been thrown upon the operator. The purpose of this work is to find liquids that will not burn, and are suitable for use in cryostats. By mixing several ingredients in suitable proportions liquids have been produced having lower freezing points than any of the ingredients. Their viscosities and corrosiveness have been investigated. Liquids that will not burn and can be used to −150° C. are described. (Mar. 17, 1926.) pp. 15. Price, 10 cents.

S521. Measurements of the Index of Refraction of Glass at High Temperatures——**C. G. Peters**

The index of refraction of a substance is equal to the ratio of the number of waves of light in a given distance in the material to the number of waves in an equal distance in vacuum. With the interference method described in this paper the number of waves under these two conditions can be determined and the change in the index with varying conditions can be measured. The indexes of nine different glasses, including flints, crowns, and pyrex, were measured for the temperature interval, 20 to 700° C. It was found that the glasses passed through a critical expansion region near 500° C. in which the expansion rate increased by 2 to 7 times. The index of refraction increased from 20° to the critical region, then decreased in the rapid expansion region, and increased again above the softening temperature. (Mar. 17, 1926.) pp. 25. Price, 10 cents.

S522. Pure Zinc at Normal and Elevated Temperatures

John R. Freeman, jr., Frederick Sillers, jr., Paul F. Brandt

A study was made of the physical properties and crystal structure of pure zinc. Data are given on the following properties: Coefficient of expansion, density, sceleroscope and Brinell hardness, tensile properties and crystal structure at normal and elevated temperatures. Proof is given that zinc has but one allotropic form between normal temperatures and the melting point. (Apr. 3, 1926.) pp. 35. Price, 15 cents.

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S523. Wind Pressure on Structures_____Hugh L. Dryden, George C. Hill

Available data on wind pressure are based on experiments made many years ago on models which do not resemble the forms commonly used for structures. The authors discuss the various features of the general problem and give a brief summary of pertinent results of modern wind tunnel investigations in the first section of the paper. A second section contains the results of measurements of pressure distribution over a model of a tall building with the wind blowing in various directions. (Apr. 3, 1926.) pp. 36. Price, 20 cents.

S524. Measurements on the Thermal Expansion of Fused Silica
Wilmer Souder and Peter Hidnert

This paper gives the results of an investigation on the thermal expansion of transparent and nontransparent fused silica for various temperature ranges between −125 and 1,000° C. A total of 48 expansion tests were made on 17 samples of fused silica. A critical temperature or minimum length was found at about −80° C. Expansion occurred on heating fused silica above the critical temperature or cooling below this temperature. The coefficients of expansion of the transparent samples differ slightly from the coefficients of the nontransparent samples. Typical expansion curves are shown and discussed. The authors' average expansion curve is compared with the results of previous investigators. The average coefficient of expansion between 20 and 1,000° C. was found to be 0.48×10^{-6} per °C. A description of the expansivity equipment used in making these tests is included in the paper. (Apr. 13, 1926.) pp. 23. Price, 10 cents.

S525. A Unicontrol High-Frequency Radio Direction Finder____F. W. Dunmore

This paper deals with the development of a special type of radio direction finder for use in taking bearings on a frequency of 2,100 kc (143 m). An installation on a 75-foot Coast Guard patrol boat is described. This direction finder is used in conjunction with a superheterodyne receiving set without alteration in the circuit. This receiving set is part of the radio equipment on these boats. The coil consists of 4 turns, 20 inches square, of heavy ignition cable. A special coupling transformer is used between the coil and the receiving set. A bearing is taken simply by rotating the direction finder coil; the balancing condenser is operated automatically by means of a cam on the direction-finder shaft. (Apr. 16, 1926.) pp. 11. Price, 5 cents.

S526. Transmission and Absorption of Sound by Some Building Materials
E. A. Eckhardt and V. L. Chrisler

This paper contains a report of the work on sound transmission through partition walls, and on the sound-absorbing properties of these walls and of various other materials commonly used in building construction. A description is given of the new sound chamber erected for the purpose of this work; details of the experimental methods are described and relative results of both transmission and absorption measurements tabulated. These results are given for frequencies covering the range from 250 to 3,470 cycles per second. Specifications for the construction of the various panels used in transmission tests are appended. It is found that as far as transmissivity goes certain panels are sufficiently opaque to sound to reduce a sound of painful intensity to complete inaudibility. The poorest panels tested were capable of reducting such a sound to about tne intensity of the ordinary speaking voice. (Apr. 28, 1926.) pp. 29. Price, 15 cents.

S527. Short Tests for Sets of Laboratory Weights_____A. T. Pienkowsky

This paper outlines rough checks for gross errors and two very short calibration systems for determining the actual error or correction for each weight of a set from 100 grams to one milligram, or of similar arrangements of other denominations.

Ordinary "direct" weighings may be used. Numerical examples are given, also notes on the balance, the buoyant effect of the air, the determination of relative instead of actual values for weights, and other details. (May 17, 1926.) pp. 29. Price, 10 cents.

S528. A Study of the Relation Between Intermittent and Nonintermittent Sector Wheel Photographic Exposures----------**Raymond Davis**

A comparison of sector wheel intermittent and equal nonintermittent exposures shows that the photographic density difference varies with the emulsion used, the illumination, the number of interruptions, and the rest periods between. When the illumination is above a certain level a greater effect results from the intermittent exposure; and conversely, for lower illuminations a loss is obtained. The magnitude of the loss or gain is affected by the number of exposures and the rest period after each exposure. The gain or loss, as the case may be, is accentuated by each interruption. (May 18, 1926.) pp. 45. Price, 20 cents.

S529. A Review of the Literature Relating to the Normal Densities of Gasses **Marion Smith Blanchard and S. F. Pickering**

In this review of the literature relating to the normal densities of gasses an attempt is made to choose the most reliable value for each gas. The number of sources of the gas in question, the methods used for its purification, the precautions observed in making the experimental measurements, the number of observations made, the agreement between observations of a set and the concordance between the results of the different observers have all been carefully considered in the selection of a final value. (May 28, 1926.) pp. 37. Price, 15 cents.

X. TECHNOLOGIC PAPERS

T290. Relation Between the Heating Value of Gas and Its Usefulness to the customer.....E. R. Weaver

This paper contains a critical review of the data which have been made public regarding the relation between the heating value of gas and its usefulness to the customer. The data are divided into two classes—those relating to direct observations of the useful effects from the utilization of gases of different qualities in the appliances in common use and statistical data showing changes in quantity of gas used which accompanied changes in heating value. It is found that there is general agreement both between the two classes of data and within each class. Some of the consequences of the relation found are pointed out. (July 19, 1925.) pp. 117. Price, 30 cents.

T291. Tests of Hollow Tile and Concrete Slabs Reinforced in One Direction Douglas E. Parsons, Ambrose H. Stang

This paper describes the results of tests made for the purpose of obtaining information on the value of hollow tiles in resisting bending and shearing stresses when combined in hollow tile and concrete slabs reinforced in one direction. The test pieces consisted of 42 beams from 8 feet 10 inches to 15 feet 3 inches long, all 8 inches deep and having a maximum width of 30 inches. Observations were made of the deformation in the concrete tiles and reinforcement, deflection of the center of the beam, and development of cracks as the loads were supplied. The results indicate that the tiles assisted the concrete in resisting bending and shearing stresses. Tables and curves give a summary of the test data, and comparisons are made between these and the usual design computations for reinforced concrete beams. (Aug. 12, 1925.) pp. 50. Price, 25 cents.

T292. Relative Merits of Cotton and Jute Cement Sacks....Robert J. Morris

This paper contains information concerning the tests made and the apparatus used to determine the relative merits of cotton Osnaburg and jute burlap sacks used as containers for Portland cement. A brief description is given of the physical tests for breaking strength, thread count, length, width, stretch, and resistance to drop; also of the practical tests made, such as the service test, where the sacks were filled with hot, freshly ground cement; the humidity test, where samples were exposed to various atmospheric conditions; and the moisture test, where the sacks of cement were subjected to excessively damp conditions. (Aug. 7, 1925.) pp. 22. Price, 10 cents.

T293. Condensation of Water from Engine Exhaust for Airship Ballasting Robert F. Kohr

An airship in flight becomes lighter as fuel is consumed by the engines. In order to correct this effect without releasing lifting gas, apparatus has been developed to condense, from the engine exhaust gas, enough of the water of combustion, formed by combination of the oxygen of the air with the hydrogen of the fuel, to compensate for the weight of fuel burned. The exhaust gas is cooled in a bank of thin aluminum tubes exposed to the air stream, and such of the condensed water as can not be directly drained from the tubes is collected in a baffle-type separator at the outlet end. The ballast normally carried may be reduced so that the addition of the condensing apparatus need not increase the load carried. (Aug. 13, 1925.) pp. 41. Price, 25 cents.

T294. Wearing Qualities of Tire Treads as Influenced by Reclaimed Rubber
W. L. Holt and P. L. Wormeley

Service tests were made on 80 "sectional tread" tires in order to determine the comparative resistance to wear of tread compounds containing reclaimed rubber and those compounded using new rubber only. The tread of each tire was made in four sections, each section representing a compound under test. The results of tread wear as obtained from each individual tire are shown and for comparison data on laboratory wear tests of the same rubber compounds are also given. These results show that the substitution of reclaimed rubber for new rubber in these compounds reduces the resistance of reclaimed rubber used. (Aug. 13, 1925.) pp. 10. Price, 5 cents.

T295. Initial Temperature and Mass Effects in Quenching
H. J. French and O. Z. Klopsch

In this report are given results of quenching experiments with high-carbon steels in which the speed of cooling was determined at the center of spheres, rounds, and plates of various dimensions quenched from various temperatures into different coolants, such as water, 5 per cent NaOH; oils; and air. The cooling velocity at 720° C. is taken as the best measure of hardening produced, and relations are developed between this and the size and shape of steel quenched. Knowing the described cooling rate at the center of any one size of the simple shapes quenched in any of the customary quenching media, such as oils and aqueous solutions, the velocity in any other size in such shapes can be closely approximated from the included data when the steel is quenched from any temperature between 720 and 1,050° C. Typical examples are given. (Aug. 25, 1925.) pp. 30. Price, 10 cents.

T296. Flow in a Low-Carbon Steel at Various Temperatures
H J. French and W. A. Tucker

This report relates to flow (elongation) in 0.25 per cent carbon steel subjected to a fixed total load in tension at constant temperature within the range 70 to 1,100° F. (20 to 595° C.). The character of flow is described, and the factors governing selection of maximum allowable stresses are discussed for service in which very long life is required and the case in which both long life and freedom from appreciable deformation must be considered. Comparisons are also given between maximum allowable stresses and the stress-strain relations determined in the customary short-time tension tests at various temperatures. (Aug. 25, 1925.) pp. 22. Price, 10 cents.

T297. A Statistical Study of Conditions Affecting the Distance Range of Radio Telephone Broadcasting Stations.....**C. M. Jansky, jr.**

The conditions affecting radio transmission are too complex to permit a simple analysis, and the most satisfactory method of studying such conditions and their variations is the analysis of a large number of similar observations taken by a large number of observers. This paper describes the organization of such a group of observers by the bureau, the methods used for making observations, and the forms used for recording 8,500 observations made over a period of a year (1922–23) on transmitting station KDKA, of the Westinghouse Electric & Manufacturing Co., located at East Pittsburgh, Pa. The data obtained were analyzed on automatic machines and charts given showing (*a*) variation of strength of atmospherics (*b*) variation of fading, (*c*) relative magnitude of obstacles to reception, (*d*) variation of interference from receiving sets, (*e*) relative magnitude of obstacles to reception grouped in bimonthly periods, (*f*) mean reliability as a function of distance. (Oct 8, 1925.) pp. 10. Price, 5 cents.

T298. Radio-Frequency Resistance and Inductance of Coils Used in Broadcast Reception——August Hund and H. B. De Groot

This paper gives data on the radio-frequency resistance and inductance of coils of different shapes and kinds of wire within the range of frequencies used in radiotelephone broadcasting. The experimental results are presented by means of curves in order to give the reader a means for designing a suitable coil. This requires that the particular coil be constructed in accordance with the data given in a table. A statement of the important properties of coils is given. (Oct. 22, 1925.) pp. 18. Price, 10 cents.

T299. Dielectric Constant, Power Factor, and Resistivity of Rubber and Gutta-Percha——H. L. Curtis and A. T. McPherson

This paper describes an investigation of the electrical properties of rubber and gutta-percha to determine their suitability for submarine cable insulation. The adaptation of the form of specimen to electrical measurement is discussed. The properties of gutta-percha and rubber are affected by their composition and methods of preparation. Measurements are given on crude rubber of different varieties and gutta-percha of known composition. The properties of rubber are shown to be affected by vulcanization and by the compounding ingredients incorporated in it. The influence of moisture on electrical properties receives consideration. (Oct. 23, 1925.) pp. 54. Price, 20 cents.

T300. Development of a Standard Bending Test for Rope Yarns
Charles W. Schoffstall and Robert C. Boyden

The need for physical tests other than for breaking strength of cordage has made necessary a study of other methods of tests which would more nearly simulate service conditions. Apparatus to test the effect of bending a rope yarn was designed and built. The yarn under tension is bent over a cross arm at the rate of a certain number of oscillations per minute. An auxiliary instrument was designed which would enable the transfer of the specimen from the rope or coil to the clamps of the apparatus without losing any of the original twist. The variables of the apparatus were studied, and a method of test formulated. (Dec. 1, 1925.) pp. 10. Price, 10 cents.

T301. A Comparative Study of Paper Fillers
Merle B. Shaw and George W. Bicking

Commercial paper fillers consisting of asbestine, talc, clay, crown filler, and gypsum, were studied to determine their comparative paper-making value. Paper-making tests were made in the semicommercial paper mill of the bureau, amounts of filler added being 10 and 20 per cent of the beater furnish. The paper produced was tested for weight, strength, color, opacity, finish, degree sized, and filler retention. Asbestine, talc, and clay were found to have similar paper-making properties. Crown filler and gypsum being soluble in water yielded somewhat different results from the other insoluble fillers. Retention was considerably less for the soluble materials and, in general, the differences noted in the characteristics of the papers were due chiefly to the difference in the amount of filler retained. The sizing process and the other paper-making operations were not adversely affected by any of the fillers employed. (Dec. 5, 1925.) pp. 16. Price, 10 cents.

T302. Investigation of Synthetic Tanning Materials——Edward Wolesensky

A preliminary study, chiefly qualitative, has been made of the methods of preparation and of the tanning properties of a number of synthetic materials, chiefly sulfonated condensation products of benzene, toluene, naphthalene, phenol, cresylic acid, and alpha and beta naphthol with formaldehyde, and in a few cases also with acetaldehyde and furfurol. Most of the products

studied possess tanning properties, and some of them are capable of producing a leather of good color, flexibility, and strength, but lacking weight and fullness. Some of these materials are suitable for the tanning of light leathers without the aid of other tanning agents, and, when used with other tanning of filling materials, may be used also in the tanning of heavy leathers. (Dec. 8, 1925.) pp. 45. Price, 15 cents.

T303. Causes of Some Accidents from Gas Appliances. An Investigation Conducted in Baltimore in Cooperation With the Baltimore Health Department, United States Public Health Service, and the Consolidated Gas Electric Light & Power Co.----------I. Vernon Brumbaugh

Several fatal asphyxiations from carbon monoxide produced by unvented gas appliances during the beginning of the winter of 1922–23 prompted the mayor of Baltimore to order an investigation by the health department in which this bureau cooperated. Studies were made of causes of asphyxiation in 18 cases, which involved the death of 5 persons and the temporary disablement of 48 persons, 13 of whom were unconscious when found.

Eight water heaters, six room heaters, and five cooking stoves were found to produce carbon monoxide. The causes were attributed to faults in design, improper installation or adjustment, deterioration or clogging of the burners. (Jan. 11, 1926.) pp. 76. Price, 30 cents.

T304. A Method for Testing Gas Appliances to Determine Their Safety from Producing Carbon Monoxide--E. R. Weaver, J. H. Eiseman, and G. B. Shawn

The requirements which must be met by a successful method for testing gas appliances to determine their safety for household use are discussed. Recently developed methods for determining and clearly representing those characteristics of an appliance which determine the relative hazard of producing carbon monoxide are described. The results of tests upon numerous appliances of varied character are given in graphic form to illustrate the application and value of the testing methods, to show the range of hazard in existing appliances, and to indicate what may reasonably be expected of good appliances in service. (Jan. 11, 1926.) pp. 30. Price, 10 cents.

T305. Permeability of Stone.----------D. W. Kessler

The paper describes an apparatus recently developed at the Bureau of Standards for determining the permeability of stone at various pressures. The results of tests on six types of stone are given. Some attention is given to determining the variation with the thickness of specimen. (Jan. 14, 1926.) pp. 17. Price, 10 cents.

T306. A Photometric Method for Measuring the Hiding Power of Paints H. D. Bruce

In this paper is described a method for measuring the hiding power of paints. Measurements are made upon the dry paint film. A black and white plate is mechanically coated with paint. The contrast between the black and white portions of the plate is then measured with a Martens photometer. The thickness of the paint film is measured by a direct reading gauge. Formulas are developed and presented for the calculation of the hiding power. The method is applicable to all but very opaque paints. Laboratory data are tabulated showing the accuracy of the method to be quite satisfactory. (Jan. 16, 1926.) pp. 18. Price, 10 cents.

T307. Durability of Cement Drain Tile and Concrete in Alkali Soils; Fourth Progress Report, 1923.----------G. M. Williams and Irving Furlong

This paper reports the results of the inspection in 1923 of experimental drain tile and concrete block installations at eight alkali-bearing projects in the West. The investigation has been carried on since 1913 and the conclusions to date are

that the best quality of concrete will disintegrate when exposed to severe alkali attack, and that installations of concrete in soils containing more than 0.1 per cent of salts of the sulphate type should be preceded by an examination of surrounding conditions. (Jan. 20, 1926.) pp. 49. Price, 20 cents.

T308. Cement-Lime Mortars.....H. V. Johnson

This paper contains results of original research on the effects which changes in the composition of cement-lime mortars have upon the water requirement, plasticity, density, time of set, shrinkage, and strength—all of which are found to vary greatly with different percentages of cement, lime, and sand. There is given also a chapter on recommended practice and a bibliography on cement-lime mortars. (Jan. 29, 1926.) pp. 34. Price, 15 cents.

T309. Behavior of Synthetic Tanning Materials Toward Hide Substance
Edward Wolesensky

The solvent action of syntans on hide during tanning varies greatly with the individual syntan, and no relation has been found between this and other characteristics of the syntan. In one group of syntans combination with the hide takes place rapidly but to a limited extent and is apparently little influenced by the concentration of the solution. Another group possesses much greater filling power, requires longer time to reach a maximum, and the rate of combination is strongly influenced by the concentration of the solution. The combination with the hide seems to be mainly of a chemical nature, but in the second group there is also some evidence that the phenomenon may be partly colloidal. (Feb. 12, 1926.) pp. 13. Price, 5 cents.

T310. Properties of Potters' Flints and Their Effects in White-Ware Bodies
E. E. Pressler and W. L. Shearer

A report is given on an investigation of the commercial flints and of their effects in typical white-ware bodies. The flints were relatively pure silica with a small percentage of iron oxide and lime, varying from 0 to 0.45 per cent. Over 95 per cent of most of the flints would pass a No. 325 sieve and over 50 per cent a theoretical No. 1000 sieve. Heat absorption and thermal expansion effects were indicated at the quartz inversion temperature and appeared to be roughly proportional to the percentage of the quartz in the samples. The firing behavior of bodies was affected less by the type of flint used than by the fineness of the flint and the presence of impurities. (Feb. 12, 1926.) pp. 27. Price, 15 cents.

T311. Compressive and Transverse Strength of Hollow Tile-Walls
A. H. Stang, D. E. Parsons, and H. D. Foster

Seventy tile walls, 6 feet long and 9 feet high, built of various designs and grades of tiles and from different sources, were tested in compression. These walls were built with ordinary commercial workmanship and under average indoor conditions. Fifty-three were tested with central loading and the others with an eccentric loading. Twenty-seven of the centrally loaded walls were also subjected to transverse tests. The walls fall into groups, depending upon the kind of clay used in making the tiles, the design of the tiles, the construction, and the mortars used. The mortar affected the strength of the walls more than any other one factor. Side construction and end construction walls were about equally strong. (Feb. 25, 1926.) pp. 37. Price, 15 cents.

T312. A Study of Case-lining Papers for the Purpose of Developing Standard Specifications.....B. W. Scribner and F. T. Carson

Investigation of waterproofed case-lining papers was made at the request of the Bureau of Foreign and Domestic Commerce in order to develop information to aid overseas shippers in their selection of such papers. The type found most suitable was duplex asphalted kraft paper. As existing methods of testing the water resistance of such paper were found inadequate, research was made to

find a suitable method of test. This resulted in the development of the "ground-glass" method, which is considered satisfactory for this purpose. Specifications of water resistance, strength, and weight were formulated, which are believed to define paper of suitable quality. (Mar. 12, 1926.) pp. 10. Price, 5 cents.

T313. Some Characteristics of Quenching Curves.H. J. French and O. Z. Klopsch

In this report is given a discussion of time-temperature cooling curves at the center of steel samples of various sizes and shapes quenched in ordinary coolants, such as water, a commercial quenching oil, and air. Based on the described experiments a method is outlined by which cooling curves for various sizes and shapes quenched from various temperatures can be derived, provided the curve for one size from one quenching temperature is available and one constant is known for the coolant. Typical examples are given. (Mar. 25, 1926.) pp. 21. Price, 10 cents.

T314. Shear Tests of Reinforced Concrete Beams.....Willis A. Slater

Large reinforced concrete beams, generally of I-shaped section, were tested to determine their resistance to shearing stresses. Shearing strengths as great as one-half the compressive strength of the concrete were developed. Generally, however, the shearing strength of the beam was dependent upon the amount of web reinforcement rather than upon the compressive strength of the concrete. Yield-point stresses in the web reinforcement were developed even when large quantities of web reinforcement were used. As a result of the tests, shearing stresses as great as 500 lbs./in.^{2} were used in the design of the concrete ships during the war. The results should be of value in fixing standards of design in general practice in reinforced concrete. (Apr. 13, 1926.) pp. 108. Price, 50 cents.

T315. Nondestructive Testing of Wire Hoisting Rope by Magnetic Analysis
R. L. Sanford

This paper describes an investigation of the magnetic properties of steel wire and the influence on them of stress, wear, and fatigue. The object of the investigation was to determine the possibilities of magnetic analysis as a nondestructive method for the routine inspection of wire hoisting rope. The connection between the magnetic and mechanical properties of steel is very close, but the relationships are so complex that more study will be required before application on a practical basis can be expected. (Apr. 16, 1926.) pp. 22. Price, 10 cents.

T316. Analysis of Synthetic Tanning Materials.....Edward Wolesensky

Methods are described for the determination of acidity, total sulphur, total inorganic matter, free sulphuric acid and sulphates, nonvolatile matter, total organic matter, and the tanning material in synthetic tanning materials which are sulphonated condensation products. These methods are mostly adaptations of principles or modifications of methods already known and are based on experience gained in the analysis of such synthetic tanning materials in the course of an investigation of these products. (May 19, 1926.) pp. 9. Price, 5 cents.

T317. Action of Sodium Sulphate in Synthetic Tanning Materials
Edward Wolesensky

Hide substance has such a marked affinity for sulphuric acid that it can remove the latter even from dilute solutions of sulphates in presence of other acids. Sulphuric acid thus combined with the hide can not be completely washed out by water nor displaced by syntans; the latter can even be displaced to a certain extent from combination with hide by the sulphuric acid. Hence neutralization of excess sulphuric acid in syntans by sodium hydroxide does not entirely prevent the acid from reacting with hide during tanning. Whether this combined sulphuric acid is harmful to the leather has yet to be determined. This behavior of sodium sulphate in syntans also interferes in certain analyses of these products by the usual methods. (May 20, 1926.) pp. 16. Price, 10 cents.

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XI. CIRCULARS

[For price and latest edition see table on page 4]

C1. National Bureau of Standards.

Gives general information concerning the organization, functions, and work of the bureau. Cites accomplishments and includes illustrations typical of work in laboratories and facilities for same.

C268. United States Government Master Specification for Steam Hose.

This specification was officially adopted by the Federal Specifications Board on October 6, 1922, for the use of the departments and independent establishments of the Government in the purchase of steam hose. The specification was prepared in cooperation with the Rubber Association of America. The hose is of wrapped construction, consisting of a rubber tube, cotton duck reinforcements, and a rubber cover.

C269. United States Government Master Specification for Rubber-Metal Gasoline Hose.

This specification was officially adopted by the Federal Specifications Board on May 1, 1924, for the use of the departments and independent establishments of the Government in the purchase of rubber-metal gasoline hose. The specification was prepared in cooperation with the Rubber Association of America. The hose is made with a flexible metal tube, a rubber tube, and a cotton jacket, in lengths of 10, 12, or 25 feet as ordered, and is adapted for use in conducting gasoline.

C270. United States Government Master Specification for Mercerized Cotton Airplane Cloth, Grade A.

This specification is intended to cover the Government's requirements for mercerized cotton airplane cloth, grade A. This specification was prepared by the technical committee on textiles of the Federal Specifications Board and officially promulgated December 6, 1924. In its preparation the committee had the cooperation of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association, so that the requirements specified are essentially in agreement with commercial practice.

C271. United States Government Master Specification for Rubber Gloves for Electrical Workers (For Use in Connection with Apparatus or Circuits not Exceeding 3,000 Volts to Ground).

This specification was officially approved by the Federal Specifications Board on July 6, 1925, for the use of the departments and independent establishments of the Government in the purchase of rubber gloves for electrical workers. The technical requirements of this specification are the same as those of Standard Specification D–120–23, adopted by the American Society for Testing Materials. Two classes of gloves are provided for. Class A gloves are intended for use with external protection of leather or other materials.

C272. United States Government Master Specification for Brown Cotton Sheeting.

This specification is intended to cover the Government's requirements for brown cotton sheeting. This specification was prepared by the technical committee on textiles of the Federal Specifications Board and officially promulgated July 6, 1925. In its preparation the committee had the cooperation of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association, so that the requirements specified are essentially in agreement with commercial practice.

C273. United States Government Master Specification for Bleached Wide Cotton Sheeting.

This specification is intended to cover the Government's requirements for bleached wide cotton sheeting. This specification was prepared by the technical committee on textiles of the Federal Specifications Board. In its preparation the committee had the cooperation of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association, so that the requirements specified are essentially in agreement with commercial practice.

C274. United States Government Master Specification for Bleached Cotton Sheets (Medium and High Count Sheeting).

This specification is intended to cover the Government's requirements for bleached cotton sheets of medium and high counts. This specification was prepared by the technical committee on textiles of the Federal Specifications Board. In its preparation the committee had the cooperation of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association, so that the requirements specified are essentially in agreement with commercial practice.

C275. United States Government Master Specification for Builders Hardware.

This specification was prepared by the technical committee for builders hardware of the Federal Specifications Board for the use of all Government departments and independent establishments in the purchase of builders hardware, and covers such items as door locks, hinges, latches, catches, turns, bolts, brackets, pivots, door closers, transom lifters and operators, and cabinet locks. Standard finishes, rules for hands of locks, and correct sizes of butts are described. Methods for testing nickel plating, zinc coatings, and japan coating are specified.

C276. Motor-Vehicle Headlighting.

Requirements for good road lighting are discussed and the construction and operation of present-day types of electric headlights explained. Few so-called antiglare devices have been found to be really effective, and the most practical solution to the headlighting problem under present conditions is the proper adjustment of lighting devices by manufacturers and sales agencies on new cars and careful maintenance of such adjustments by owners and drivers. The methods used at the Bureau of Standards for making laboratory tests on electric headlight devices are briefly described. State law is presented. The Appendix contains the specifications under which tests for approval of devices by State officials are made.

C277. United States Government Master Specification for Bleached Cotton Pillowcases.

This specification is intended to cover the Government's requirements for bleached cotton pillowcases. This specification was prepared by the technical committee on textiles of the Federal Specifications Board and officially promulgated. In its preparation the committee had the cooperation of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association, so that the requirements specified are essentially in accord with commercial practice.

C278. United States Government Master Specification for Brown Wide Cotton Sheeting.

This specification is intended to cover the requirements of the Government for brown wide cotton sheeting. This specification was prepared by the technical committee on textiles of the Federal Specifications Board and officially promulgated. In its preparation the committee had the cooperation of the National Association of Cotton Manufacturers and the American Cotton Manufacturers Association, so that the requirements specified are essentially in agreement with commercial practice.

C279. Relations Between the Temperatures, Pressures, and Densities of Gases.

This paper gives a simple but thorough discussion of the relations between the temperatures, pressures, volumes, and weights of gases. The experimental data involving high pressures, such as are encountered in the commercial handling of compressed gases, are presented in a form which permits of ready application. The compressibilities of gases as calculated from the equations of state of van der Waals, of Dieterici, and of Berthelot are compared with existing data for the purpose of estimating their accuracy in predicting the compressibilities of gases for which no experimental data are available. There is also included an extensive bibliography of the literature covering the subjects of the circular.

C280. Time Throughout the World.

This paper gives a brief historical sketch of the development of the standard time system, a map showing the time zone boundaries in the United States, and a list of the official stations sending out radio time signals. Time in nearly every foreign country and in many foreign cities is also given, compared with both Greenwich mean time and with noon, eastern standard time.

C281. The Technology of the Manufacture of Gypsum Products.

A number of gypsum mills were visited in the spring of 1924. An account of the methods of manufacture, including a description of each of the mills visited, together with a discussion as to the relative merits of processes found in use, is given.

C282. Fire-Clay Brick: Their Manufacture, Properties, Uses, and Specifications.

The paper embodies (1) a brief history of fire-clay brick manufacture, (2) a discussion of the geology and classification of the raw materials used, (3) a nontechnical description of the methods of manufacture and the properties and uses of the finished product, (4) F. S. B. Specification No. 268 for the purchase of fire-clay brick, and (5) a short bibliography.

C283. United States Master Specification for Stitches, Seams, and Stitching.

Specifications for stitches, seams, and stitching for use by Government departments, as prepared by the committee on standardized stitches and seams, of the Federal Specifications Board.

C284. United States Government Master Specification for Rubber Bands.

This specification was officially adopted by the Federal Specifications Board on September 1, 1923, for the use of the departments and independent establishments of the Government in the purchase of rubber bands. The specification was prepared in cooperation with the Rubber Association of America.

C285. United States Government Master Specification for Slate-Surfaced Asphalt Prepared Roofing and Shingles.

This specification was prepared by the technical committee on bituminous roofing and waterproofing compounds, Federal Specifications Board, after careful consideration of suggestions from manufacturers. The specification covers both slate-surfaced roll roofing and shingles. These shingles and this type of roll roofing are in a form ready for application to a roof. Complete methods for sampling and testing are included.

C286. United States Government Master Specification for Asphalt-Saturated Rag Felt for Flashings.

This specification was prepared by the technical committee on bituminous roofing and waterproofing compounds, Federal Specifications Board, after careful consideration of suggestions from manufacturers. The specification covers a type of material suitable for use in the construction of flashings in connection with built-up roofing and when it is desired to use a sheet heavier than 14 pounds for unsurfaced built-up roofing. Complete methods for sampling and testing are included.

C287. United States Government Master Specification for Asphalt-Saturated Woven Cotton Fabric for Waterproofing.

This specification was prepared by the technical committee on bituminous roofing and waterproofing compounds, Federal Specifications Board, after careful consideration of suggestions from manufacturers. This specification covers a type of cotton fabric which has been saturated with asphalt and is suitable for use with asphalt for waterproofing and damp proofing, by the so-called membrane system. Complete methods for sampling and testing are included.

C288. United States Government Master Specification for Tender Hose (Corrugated).

This specification was officially adopted by the Federal Specifications Board on October 6, 1922, for the use of the departments and independent establishments of the Government in the purchase of tender hose. The specification was prepared in cooperation with the Rubber Association of America. The hose consists of (1) an inner rubber tube, (2) two plies of cotton duck, (3) a helix of wire, (4) a layer of rubber, (5) two plies of cotton duck, (6) an outer cover of rubber.

C289. United States Government Master Specification for Divers' Hose.

This specification was officially adopted by the Federal Specifications Board on October 6, 1922, for the use of the departments and independent establishments of the Government in the purchase of divers' hose. The specification was prepared in cooperation with the Rubber Association of America. The hose is of braided construction, one-half inch diameter, and consists of a rubber tube, three plies of braided cotton reinforcement, and a rubber cover.

C290. United States Government Master Specification for Gas Hose.

This specification was officially adopted by the Federal Specifications Board on October 6, 1922, for the use of the departments and independent establishments of the Government in the purchase of gas hose. The specification was prepared in cooperation with the Rubber Association of America. The hose is of wrapped construction, five-sixteenth inch diameter, and consists of a rubber tube, cotton duck reinforcements, and a rubber cover. It is branded "ACETHYD" for acetylene-hydrogen and "OXY" for oxygen.

C291. United States Government Master Specification for Water and Wash Deck Hose.

This specification was officially adopted by the Federal Specifications Board on October 6, 1922, for the use of the departments and independent establishments of the Government in the purchase of water hose. The specification was prepared in cooperation with the Rubber Association of America. The hose is of wrapped construction, consisting of a rubber tube, cotton-duck reinforcements, and a rubber cover.

C292. United States Government Master Specification for Water-Suction Hose (Smooth Bore).

This specification was officially adopted by the Federal Specifications Board on October 6, 1922, for the use of the departments and independent establishments of the Government in the purchase of water-suction hose. The specification was prepared in cooperation with the Rubber Association of America. The hose consists of (1) an inner rubber tube, (2) a layer of cotton duck, (3) a helix of wire with rubber filling between the coils, (4) a second layer of rubber, (5) layers of cotton duck, (6) an outer rubber cover.

C293. United States Government General Specification for Textile Materials (Methods of Physical and Chemical Tests).

General methods of testing textiles have been drawn up for use in making determinations in textile specifications promulgated by the Federal Specifications Board so that variations introduced by different test methods may be eliminated. They are not intended to include all the textile test methods in use in the textile industry. It is probable that they will be revised and added to from time to time as the necessity arises.

C294. Standards for Paper Towels.

Results of an investigation made for the purpose of developing specifications for purchase of paper towels are given. Wide variation was found in this paper product as regards both quality and methods of marketing.

The composition of the different kinds of paper toweling is described and considerations involved in valuation discussed. Recommendations are made in respect to methods of testing, simplification of sizes, basis for expression of weight, unit of payment, and unit of packaging. Specifications are suggested for towels suitable for general use.

C295. Temperature Corrections to Readings of Baumé Hydrometers, Bureau of Standards Baumé Scale for Sugar Solutions (Standard at 20° C.).

In trade transactions involving the sale of molasses it is the general practice to make the Baumé determinations at various temperatures between 38° C. and 60° C. To facilitate the correction of the hydrometer readings to the standard temperature of 20° C. a table of temperature corrections has been calculated. This table is submitted as supplementary to the Baumé table of Bates and Bearce (B. S. Tech. Paper No. 115) and the table of temperature corrections for Brix hydrometers (Table 11, B. S. Circular No. 44).

C296. Research Associates at the National Bureau of Standards.

Recites history of research associate plan at the bureau, and discusses cooperation with the industries and advantages offered for research work at bureau. Gives list of organizations accorded research associate privileges, general fields of research, specific problems, and names of research associates. Specific illustrations of problems undertaken and value of results are given.

C297. United States Government Master Specification for Plastic Fire-Clay Refractories.

This specification, prepared for the Federal Specifications Board by its technical committee, provides for one class of material and specifies that this material shall contain not more than 65 per cent total SiO_2; that the softening point shall not be less than that of standard pyrometric cone No. 31; that when delivered it shall contain not more than 15 per cent water; that the total linear dry-and-burned shrinkage shall not exceed 4 per cent; and, when specified, that the material shall pass the simulated service test. The specification also contains detailed instructions for sampling and testing.

C298. United States Government Master Specification for Fire Clay.

This specification, prepared for the Federal Specifications Board by its technical committee, provides for two classes of material. Class F shall be ground to such fineness that not less than 96 per cent shall pass a 20-mesh sieve; it shall show satisfactory bonding power; the softening point shall be not more than 3 cones (approximately 60° C.) lower than that of the brick with which it is to be used; and, when required, it shall pass the Navy simulative service test. Material of class C shall have the same softening point and bonding power as that of class F, but only 90 per cent need pass a 20-mesh sieve, and the simulative service test shall not be required.

C299. United States Government Master Specification for Fire-Clay Brick.

This specification, prepared for the Federal Specifications Board by its technical committee, provides for six classes of material. The general requirements for fire-clay brick are given and, in addition, requirements for each class and methods of testing are detailed. The specification also contains definitions of each class based on the service for which the brick of each class is intended.

C300. Architectural Acoustics.

The fundamental principles governing the construction of an acoustically successful auditorium are no longer new, but are not yet generally understood by those engaged in such work. In this circular these principles are stated, and an example is worked out showing their practical application to the planning of a new auditorium or to the curative treatment of one that has proved to be unsatisfactory.

C301. United States Government Master Specification for Ink, Drawing, Colored Waterproof.

The specification calls for two types of ink—solution of dye and suspension of insoluble pigment. Each of these is in the colors, red, orange, yellow, green, blue, violet, and brown. Formulas are given for standard inks of the first type. Tests for determining the quality of samples submitted are described.

C302. United States Government Master Specification for Flake Orange Shellac.

This specification was prepared by the technical committee on paints and oils of the Federal Specifications Board after carefully considering suggestions from shellac importers and varnish manufacturers. The specification covers requirements for orange-flake shellac for use in ship-bottom paints and in the preparation of orange-shellac varnish. Four types of shellac are covered and detailed directions for sampling and testing are included.

C303. United States Government Master Specification for Shellac Varnish.

This specification was prepared by the technical committee on paints and oils of the Federal Specifications Board after carefully considering suggestions from shellac importers and varnish manufacturers. The specification covers light,

medium, and heavy body varnishes made from two types of orange shellac and two types of bleached shellac. Detail directions for sampling and testing are included.

C304. Properties and Manufacture of Concrete Building Units.

Numerous inquiries have been received at the Bureau of Standards from prospective makers or users of concrete units, who were interested in learning more of their properties or the details of the manufacturing methods. This circular endeavors to bring out the essential features concerning concrete brick, block, and building tile, and to give some information on their manufacture.

C305. United States Government Master Specification for Rubber Tubing.

This specification was officially adopted by the Federal Specifications Board on September 15, 1922, for the use of the departments and independent establishments of the Government in the purchase of rubber tubing. The specification was prepared in cooperation with the Rubber Association of America. Two grades of tubing are provided for as follows: Grade A, known as "pure gum" tubing contains not less than 90 per cent by volume of rubber. Grade B, known as "compounded" tubing contains not less than 60 per cent by volume of rubber.

C306. United States Government Master Specification for Rubber Matting.

This specification was officially adopted by the Federal Specifications Board on March 1, 1926, for the use of the departments and independent establishments of the Government in the purchase of rubber matting. The specification which was prepared in cooperation with the Rubber Association of America, gives dimensions and general requirements for the construction of roll matting suitable for floor covering. It also includes detailed test requirements for the rubber compound and fabric used.

C307. United States Government Master Specification for Pneumatic Hose.

This specification was officially adopted by the Federal Specifications Board on October 6, 1922, for the use of the departments and independent establishments of the Government in the purchase of pneumatic hose. The specification was prepared in cooperation with the Rubber Association of America. The hose is of wrapped construction, consisting of a rubber tube, cotton duck reinforcements, and a rubber cover. It is branded "Rock-drill" or "Pneumatic-tool" as specified.

C308. United States Government Master Specification for Rubber Stoppers.

This specification was officially adopted by the Federal Specifications Board on March 1, 1926, for the use of the departments and independent establishments of the Government in the purchase of rubber stoppers. The specification was prepared in cooperation with the Rubber Association of America. The stoppers are suitable for general laboratory use. The specification provides detail requirements regarding composition of the rubber, sizes, dimensions, and methods of test.

XII. HANDBOOKS

H6. Safety Rules for the Installation and Maintenance of Electrical Supply Stations.

This handbook contains that portion of the National Electrical Safety Code dealing with the installation and maintenance of electrical equipment in generating stations and substations. Regulations deal with the general protective arrangements of equipment and include special sections dealing, respectively, with rotating equipment, storage batteries, transformers, conductors, fuses, switches, switchboards, lightning arresters and grounding. The rules have recently been revised according to the procedure of the American Engineering Standards Committee, and this publication represents the fourth edition. (Feb. 5, 1926.) pp. 56. Price, 10 cents.

HB7. Safety Rules for the Installation and Maintenance of Electric Utilization Equipment.

This consists of section 9 and part 3 of the fourth edition of Handbook No. 3. (Mar. 12, 1926.) pp. 71. Price, 15 cents.

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XIII. SIMPLIFIED PRACTICE RECOMMENDATIONS

R34. Warehouse Forms.

Simplified Practice Recommendation No. 34 is one of a series of publications on the elimination of waste in industry. It contains a history of the development, report of the general conference, and the result obtained in an effort to eliminate excess variety of warehouse forms. It shows facsimiles of the approved forms. The specific recommendations of the general conference covered in this publication, which have been accepted by representative users, are to become effective forthwith. Price, 10 cents.

R37. Commercial Forms (Invoice, Inquiry, and Purchase Order).

Simplified Practice Recommendation No. 37 is one of a series of publications on the elimination of waste in industry. It contains a history of the development, report of the general conference, and the result obtained in an effort to eliminate excess variety of invoice, purchase order, and inquiry forms. It shows facsimiles of the approved forms. The specific recommendations of the general conference covered in this publication, which have been accepted by representative users, are to become effective at once. Price, 5 cents.

R38. Sand-Lime Brick.

Simplified Practice Recommendation No. 38 is one of a series of publications on the elimination of waste in industry through simplified practice. It contains a history of the development, report of the general conference, and the result obtained in an effort to eliminate excess variety in sizes of sand-lime brick. This project is to become effective from July 1, 1925. Price, 5 cents.

R40. Hospital Chinaware.

Simplified Practice Recommendation No. 40 is one of a series of publications on the elimination of waste in industry through simplified practice. It contains a history of the development, report of the general conference, and the result obtained in an effort to eliminate excess variety in sizes of hospital chinaware. This project is to become effective from July 1, 1925. Price, 5 cents.

R42. Paper Grocers' Bags.

Simplified Practice Recommendation No. 42 is one of a series of publications on the elimination of waste in industry through simplified practice. It contains a history of the development, report of the general conference, and the result obtained in an effort to eliminate excess variety in capacities, colors, qualities, and strengths of paper grocers' bags. This project is to become effective from October 15, 1925. Price, 5 cents.

R44. Boxboard Thicknesses.

Simplified Practice Recommendation No. 44 is one of a series of publications on the elimination of waste in industry. It contains a history of the development, report of the general conference, and the result obtained in an effort to eliminate excess variety of thicknesses and colors of stock for containers and set-up folding boxes. It carries tables of thicknesses adopted by the industry for all kinds, grades, and qualities of box board considered by the conference. This program is to become effective from October 1, 1925. Price, 5 cents.

R45. Grinding Wheels.

Simplified Practice Recommendation No. 45 is one of a series of publications on the elimination of waste in industry through simplified practice. It contains a history of the development, report of the general conference, and the result obtained in an effort to eliminate excess variety of grinding wheels. This project is to become effective, as applying to new production, January 1, 1926, and for existing stocks before July 1, 1926. Price, 10 cents.

R47. Cut Tacks and Small Cut Nails.

Simplified Practice Recommendation No. 47 is one of a series of publications on the elimination of waste in industry through simplified practice. It contains a simplified schedule of styles, sizes and methods of packing, report of the general conference, and the result obtained in an effort to eliminate excess variety in this commodity. This program is to be effective from January 1, 1926. Price, 5 cents.

R49. Sidewalk, Floor, and Roof Lights.

Simplified Practice Recommendation No. 49 is one of a series of publications on the elimination of waste in industry through simplified practice. It contains a history of the development, report of the general conference, and the result obtained in an effort to eliminate excess variety in sizes, styles, and shapes of sidewalk, floor, and roof lights. This project is to become effective from March 1, 1926, subject to annual revision. Price, 5 cents.

R51. Die Head Chasers (for self-opening and adjustable die heads).

Simplified Practice Recommendation No. 51 is one of a series of publications on the elimination of waste in industry through simplified practice. It contains a history of the project, survey of conditions in the industry, report of the general conference, and the result obtained in an effort to eliminate excess variety in sizes and types of chasers for self-opening and adjustable die heads. This program is to become effective from April 1, 1926, subject to annual revision. Price, 5 cents.

XIV. BUILDING AND HOUSING

BH8. Recommended Practice for Arrangement of Building Codes.

A description of existing diversity of building-code arrangement with administrative advantages of uniform and logical sequence of requirements. Presents a recommended outline for chapters, sections, and principal subdivisions of building codes. The main divisions are arranged as nearly as possible in the sequence in which reference is necessary to code requirements when a building is planned, designed, and constructed. The content of each heading is plainly indicated by descriptive material explanatory of its meaning. The report provides for all types of municipal requirements having to do with safety of buildings or equipment, though it is expected not all sections or subdivisions will necessarily be utilized in any one code. (July 5, 1925.) 29 pp. Price, 10 cents.

XV. MISCELLANEOUS PUBLICATIONS

M65. National Directory of Commodity Specifications: Classified and Alphabetical Lists and Brief Descriptions of Existing Commodity Specifications.

This contains an alphabetical list of such commodities as are paid for out of taxes and also a thoroughly classified list of the specifications for these commodities formulated not only by the public purchasing agencies, but also by other organizations having national recognition. In collecting the specifications correspondence was carried on with over 500 public purchasing organizations and more than 500 technical societies and trade associations vitally interested in specifications. The work has been carried on cooperatively by the Bureau of Foreign and Domestic Commerce and the Bureau of Standards in accordance with detailed plans formulated or approved by an advisory board composed of representatives of 14 national organizations interested in the preparation and unification of specifications, as follows: American Electric Railway Association American Engineering Standards Committee, American Hospital Association, American Hotel Association, American Society for Testing Materials, Associated Business Papers (Inc.), Associates for Government Service (Inc.), Chamber of Commerce of the United States, National Association of Manufacturers, National Association of Purchasing Agents, National Conference of Business Paper Editors, National Conference of Governmental Purchasing Agents, National Electric Light Association, and the Society of Automotive Engineers. (Aug. 28, 1925.) 385 pp. Price, $1.25.

M66. Second Technical Conference of State Utility Commission Engineers.

Contains an address by the Director of the Bureau of Standards, and papers with extended discussions on problems involved in making public utility valuations and rates; rural extensions and rural electric service; a proposed classification of quantity units for telephone service; and informal discussion on engineering problems of interest to public service commission engineers, such as voltage classification of circuits, gas service conditions and production of carbon monoxide, and voltage variations on electric circuits. 98 pp. Price, 15 cents.

M67. Kilocycle-Meter Conversion Table.

A card 6 by 11 inches giving a table to be used in converting meters to kilocycles or kilocycles to meters. Both units are extensively used in radio, and this publication fills the need of a rapid means of obtaining one in terms of the other. Pairs of values are given for every tenth number from 10 to 10,000. Price, 5 cents.

M68. Adjust your Headlights.

A chart (folder) 9 by 23 inches describing and illustrating manner of properly adjusting automobile headlights. Price, 5 cents.

M69. Annual Report of the Director of the Bureau of Standards to the Secretary of Commerce for the Fiscal Year Ended June 30, 1925.

Beginning with the annual report for the fiscal year ended June 30, 1925, the annual report has been amplified to include more complete reference to and description of the completed and pending research and testing for the year. In addition, there has been introduced a general section at the beginning outlining

the functions, organization, and location of the bureau. The functions relate to standards of measurements, standard physical constants, standards of quality, standards of performance, and the relation of the bureau's work to the public. A chart gives an analytical synopsis of the functions of the bureau with the scope, purpose, and effect of each function. At the end are given brief summaries of the work of publications, library, correspondence, stores, personnel, appropriations, and accounts, as well as mechanical plant, construction facilities, and the care of buildings and grounds. There is a concluding section relating to recommendations.

M70. Report of Eighteenth National Conference on Weights and Measures of the United States. (1925.)

Contains: Addresses by the Secretary of Commerce and the president of the conference; papers and discussions on methods of sale of ice cream, methods and equipment for field and factory tests of heavy-capacity platform scales, practicability of sale of commodities on basis of moisture-free ingredients, methods of test of taximeters, test-car accuracy, Post Office Department program for maintaining accuracy of scales, necessity for tolerances in excess weighing in the Customs Service, progress of weights and measures in the far West, railroad supervision of baggage and freight scales, meeting problem of pedlars and transient vendors, supervision of weighmasters, and activity of Bureau of Standards in increasing accuracy of freight weighing; and reports on specifications and tolerances for vehicle tanks (adopted) and for taximeters (adopted tentatively), on tolerances for bread (adopted) and on amendment to model law with reference to sales of service (adopted). 187 pp. Price, 50 cents.

M71. Compressibilities of Gases.

This paper contains 13 graphs (8 x 9½ inches) for computing the compressibilities of air, argon, helium, hydrogen, methane, neon, nitrogen, and oxygen, and for computing the volumes delivered from cylinders containing argon, helium, hydrogen, nitrogen, and oxygen at high pressures. Price, 10 cents.

M72. Strain Lines Developed by Compressive Tests on Structural Members of the Delaware River Bridge at the United States Bureau of Standards for the Delaware River Bridge Joint Commission.

Although the Luder or Hartman lines on the surface of a steel specimen which has been stressed to the yield point have been known for many years they could not be readily photographed because of the lack of contrast. It was found in testing portions of the Delaware River Bridge under compressive loads that the surface of the specimen could be coated with a thin mixture of white Portland cement and water, which dried to a clear white. The portions of the specimen which reached the yield point of the steel were clearly shown and readily photographed. The method is described, and two typical photographs illustrate the results which were obtained. A poster 14¾ by 18 inches. Price, 5 cents.

M73. Subject Index of United States Government Master Specifications.

Alphabetical list of specifications which have been officially adopted and promulgated by the Federal Specifications Board as United States Government master specifications, for the mandatory use of all departments and independent establishments of the Government. 6 pp. Price, 5 cents.

XVI. PUBLISHED PAPERS BY THE BUREAU STAFF PRINTED IN OUTSIDE JOURNALS ON SUBJECTS WITHIN THE BUREAU'S FIELD OF WORK

[June 1, 1923, to June 30, 1926. For papers prior to this see Annual Reports of 1922 and 1923]

These articles are not available either from the Superintendent of Documents or the Bureau of Standards. The proper issue of the periodical should be consulted at a library maintaining files of scientific and technical papers.

1. WEIGHTS AND MEASURES

A study of sieve specifications (Lewis V. Judson), Proc. of Am. Soc. for Test. Mats., **24**, pt. II, p. 1084; 1924.

Some recent results obtained in standardization of geodetic base-line tapes (L. V. Judson and B. L. Page), J. Wash. Acad. of Sci., **14**, p. 340; Aug. 19, 1924.

Notes on the graduation of invar base-line tapes (L. V. Judson and B. L. Page), J. Wash. Acad. of Sci., **14**, p. 342; Aug. 19, 1924.

Are your sieves standardized? (Lewis V. Judson), Chem. Metl. Eng., **13**, p. 823; Nov. 24, 1924.

New ruling for haemacytometer chambers (Lewis V. Judson), J. Am. Med. Assn., **84**, p. 947; Mar. 28, 1925; J. Opt. Soc.; May, 1925.

Thermal expansion of aluminum and various important aluminum alloys (Peter Hidnert), Chem. and Met. Eng.; 1925.

Thermal expansion of molybdenum (Peter Hidnert and W. B. Gero) (abstract), Sci. Abstracts (Abst. 589); March, 1925.

Observations on the "hydrogen point" in iron (Henry S. Rawdon and Peter Hidnert) (abstract in press), Phys. Rev.

Physical properties of dental material (progress report) (Wilmer Souder), J. Am. Dental Assn.; 1925.

Physical properties of dental materials II (wrought gold) (R. L. Coleman), J. Am. Dental Assn.; May, 1925.

Continuous motion to the dividing engine carriage (abstract) (Wilmer Souder), Proc. of Opt. Soc. of Am.; October, 1923.

Analysis of track scale tolerances (H. M. Roeser), Scale Jour.; Aug. 10, 1923.

Weighing cars and trucks one end at a time (H. M. Roeser), Scale J.; May 10, 1924.

Determining the constants of oil decline curves (H. M. Roeser), Min. and Met.; June, 1924.

Note on the nature of the correlation coefficient (H. M. Roeser), Am. Math. Monthly, **31**; September, 1924.

The relation between inches and millimeters (H. W. Bearce), Am. Mach., **59**, No. 21, p. 764; Nov. 22, 1923.

Precision measuring instruments used in gauge inspection (George K. Burgess), Army Ordnance, **4**, No. 12, pp. 375–380; May–June, 1924.

The work of the International Bureau of Weights and Measures (abstract) (Lewis V. Judson), J. Wash. Acad. of Sci.; Mar. 4, 1924.

A plotting instrument (A. H. Sellman), J. Opt. Soc. of Am. and Rev. of Sci. Inst., **8**, p. 693; May, 1924.

Gages, a key problem (G. K. Burgess), Proc. Soc. Aut. Engrs., **16**, p. 456; April, 1925.

Unilateral and bilateral tolerances as applied to interchangeable manufacture (H. W. Bearce), Mech. Engr., **47**, No. 6, p. 485; June, 1925.

Fire-hose coupling screw thread standard has been completed (H. W. Bearce), A. S. M. E. News, June 7, 1925.

How the United States Bureau of Standards cooperates with the Horological Institute of America (R. E. Gould), Jewelers' Circular, p. 131; June 10, 1925.

Geodetic instruments from the viewpoint of the physicist (L. V. Judson), Bulletin, National Research Council, **10**, pt. 3, p. 36; July, 1925.

The possibility of a specification for dental amalgams (Wilmer Souder), Official Bulletin, Chicago Dental Soc., **V**, No. 48; July 24, 1925.

Chronometer test (R. E. Gould), Jewelers' Circular, p. 111; Aug. 12, 1925.

The stop watch test (R. E. Gould), Jewelers' Circular, p. 153; Aug. 19, 1925.

2. ELECTRICITY

Use of an oscillograph in mechanical measurements (H. L. Curtis), J. Am. Inst. Elect. Engrs., **44**, p. 45; January, 1925.

The standardization of electrical measuring instruments (H. B. Brooks), J. Am. Inst. Elect. Engrs., **42**, p. 713; July, 1923.

Accuracy tests of meggers (H. B. Brooks), Elect. World, **85**; 1925.

Nondestructive testing of wire rope (R. L. Sanford), Min. and Met., **4**, p. 333; July, 1923; Power, **58**, p. 1031; December, 1923.

The present status of magnetic analysis (R. L. Sanford), Trans. Am. Soc. Steel Treat., **5**, p. 577; June, 1924.

New developments in electric telemeters (O. S. Peters and R. S. Johnston), Proc. Am. Soc. Test. Mat., **23**, p. 592; 1923. Abstract in Engrs. News-Record, **91**, p. 27; 1923.

Batteries for airplane service (G. W. Vinal), Aeronaut. Digest, **3**, p. 162; September, 1923.

EMF of cells at low temperatures (G. W. Vinal and F. W. Altrup), Railway Signalling, **16**, p. 449; November, 1923.

The tarnishing and detarnishing of silver (G. W. Vinal and G. N. Schramm), Metal Industry, **22**, p, 15; January; p. 110, March; p. 151, April; p. 231, June, 1924.

Effect of certain impurities in storage battery electrolytes (G. W. Vinal and F. W. Altrup), J. Am. Inst. Elect. Engrs., **43**, p. 313; April, 1924.

Report of radio battery committee on the standardization of tests for dry cells used in radio receiving sets (G. W. Vinal, C. F. Burgess, and C. A. Gillingham), Trans. Am. Electrochem. Soc., **45**, p. 15; April, 1924.

Storage battery electrolytes (G. W. Vinal and G. N. Schramm), J. Am. Inst. Elect. Engrs., **44**, p. 128; February, 1925; Power, **61**, p. 509; March, 1925.

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Methods of varying the sensitivity of galvanometers (F. Wenner), J. Opt. Soc. Am. and Rev. of Sci. Instruments, **11**, No. 5, p. 495; November, 1925.

3. PHOTOMETRY AND ILLUMINATION

Legislation and approved headlights are not sufficient to eliminate glare (E. C. Crittenden), Am. Motorist, **15**, p. 10; September, 1923.

The menace of the dimmed headlight (R. E. Carlson), Motor Life, **19**, p. 23; January, 1924.

The automobile head lamp situation (R. E. Carlson), J. Soc. Automotive Engrs., **13**, p. 526; December, 1923.

Adjust your headlights (R. E. Carlson), folder issued by the National Automobile Chamber of Commerce; 1924.

The lights of the White House (Ben S. Willis), Light, **2**, p. 5, No. 5; May, 1924; and **2**, p. 5, No. 7; July, 1924.

The solution of the glare problem (M. C. Malamphy), The Battery Man, **4**, p. 21; May, 1924.

Report of sixth session International Commission on Illumination (E. C. Crittenden), Trans. Ill. Engr. Soc., **19**, p. 607; September, 1924.

Better lighting as a public service (E. C. Crittenden), Trans. Ill. Engr. Soc., **19**, p. 827; November, 1924.

Lamp efficiency and life tests (J. F. Skogland and J. Franklin Meyer), Elect. World, **84**, p. 1302; Dec. 20, 1924.

A survey of street lighting practice in the United States (J. Franklin Meyer), Trans. Ill. Engr. Soc., **20**, p. 21; January, 1925; also in Amer. City, **32**, p. 21; January, 1925, and Munic. and County Engr., **67**, p. 252; November, 1924 (abst.).

4. SAFETY AND UTILITY STANDARDS

Résumé of rules used in electric light and power regulation (J. Franklin Meyer), Elect. Light and Power, **1**, p. 41 (No. 7); July, 1923.

Safety legislation (M. G. Lloyd), Safety Engr., **46**, p. 14; July, 1923.

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American aeronautical safety code (A. Halsted), Natl. Safety News, **10**, p. 27; September, 1924.

Grounding of secondary circuits (M. G. Lloyd), Proc. Internat. Assn. Municipal Electricians, p. 77; 1924.

Practical uses of the logging and sawmill safety code (J. A. Dickinson), Nat. Safety News, **10**, p. 35; December, 1924.

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Traffic signals (M. G. Lloyd), Paper before Internat. Assoc. of Municipal Electricians, thirtieth annual convention; Aug. 19, 1925.

5. RADIO

Recent developments in radio in the United States (J. H. Dellinger), Boletin de la Uniao Pan-Americana (Portuguese), **25**, p. 31; July, 1923. Boletin de la Union Panamericana (Spanish), **57**, p. 117; August, 1923.

Bureau of Standards explores short wave regions (F. W. Dunmore), QST, **6**, p. 75; July, 1923.

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A method of measuring very short radio wave lengths and their use in frequency standardization (F. W. Dunmore and F. H. Engel), Proc. Inst. Radio Engrs., **11**, p. 467; October, 1923.

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R. F. properties of insulating materials (J. L. Preston and E. L. Hall), QST, **9**, p. 26; February, 1925.

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XVII. SUBJECT INDEX TO NEW PUBLICATIONS

The consolidated index in Circular 24 is designed to include citations to titles, cross references, and subsidiary topics of all printed publications of the bureau listed in that circular. The following index supplements the index in Circular 24 by giving the additional index references to cover new publications announced in this supplementary list. The circular, supplementary list, and the two indexes contained therein cover all bureau publications except those published in outside journals up to the date the supplement goes to print.

A

Absorbency of paper towels, C294.
Accidents from gas appliances, T303, T304.
Acoustics, C300.
  rooms, S526.
  some building materials, S526.
Activities of bureau, C1.
Adjustment of automobile headlights, C276, M68.
Airplane cloth, grade A. C270.
Airship ballast, T293.
Alkaline soils, cement tile durability in, T307.
    concrete durability in, T307.
Alloy steels, etching methods and solutions for, S518.
Alternating current distribution, S509.
Annual Conference on Weights and Measures. *See* National Conference on Weights and Measures.
Apparatus for expansion determination, S513.
Apparatus, thermal expansion, S524.
Appliances, gas, accidents from, T303, T304.
  testing of gas, T304.
Approved headlamp devices, C276.
Architecture, C300.
Arrangement of building codes, BH8.
Artichoke, Jerusalem, levulose from, S519.
Asphalt slate-surfaced prepared roofing and shingles, specification for, C285.
Asphalt-saturated rag felt for flashings, specification for, C286.
Asphalt-saturated woven cotton fabric for waterproofing, C287.
  specification for, C287.
Asphalted paper, T312.
Asphyxiation from manufactured gas, T303.
Associates, research, at the Bureau of Standards, C296.
Auditoriums, construction of, C300.
Automobile headlights, C276.
Axial stresses in hardened steel cylinders, S513.

B

Bags, paper, grocers', R42.
Balancing of sector wheels, S511.
Ballast for airship, T293.
Bands, rubber, specification for, C284.
Batteries, installation of storage, H6.
Baumé hydrometer scales, temperature corrections for, C295.
Beams, concrete, shear tests of, T314.
Bending test for rope yarns, T300.
Bleached cotton pillowcases, C277.
  sheets, C274.
Block, concrete, C304.
Board, Box, thicknesses, R44.
Boxboard thicknesses, R44.
*Bread, tolerances for, M70.
Brick, fire-clay, C299
    their manufacture, properties, uses, and specifications, C282.
    U. S. Government master specification for, C299.
  sand-lime, R38.
Broadcasting stations, conditions affecting distance range, T297
Brown cotton sheeting, C272.
  sheeting, wide, C278.
Builders hardware specifications, C275
Building code arrangement, BH8.
Building consistency, T308
Building materials, sound transmission and absorption of some, S526.
Buildings, wind pressures on, S523.
Bureau of Standards, research associates at, C296.
  what it is and what it does, C1.

C

Cabinet locks, specifications for, C275.
Calibration, sets of weights, S527, C3.
Camera, for photographing cylindrical surfaces, S517.
Carbon monoxide poisoning, M66.
  gas appliances, T303, T304
Case-lining paper, T312.
Cement sacks, relative merits of cotton and jute, T292.
Cement tile durability in alkaline soils, T307.
Cement, time of set, T308.
Characteristics of quenching curves, T313.
Chasers, die head, R51.
Chemical compositions of commercial flints, T310.

Chinaware, hospital, R40.
Chromium steel, etching methods and solutions for, S518.
Clay, fire brick, their manufacture, properties, uses and specifications, C282.
U. S. Government master specification for, C298.
Classification of telephone service, M66.
Cloth, airplane, grade A, C270.
Code, building, arrangement, BH8.
National Electrical Safety, H6, H7.
Coils, T298.
broadcast frequencies, T298.
Colored waterproof drawing ink, specification for, C301.
Commercial forms, R37.
Commodity specifications, M65.
Compressional stresses in hardened steel cylinders, S513.
Compressive and transverse strength of hollow-tile walls, T311.
Concrete, C304.
beams, shear tests of, T314.
block test, T307.
durability in alkaline soils, T307.
products, C304.
slabs, tests of, T291.
Condensation of exhaust water, T293.
Conference, National, on Weights and Measures. *See* National Conference on Weights and Measures.
Constants, C1.
Construction data for hollow tile walls, T311
Cooling curves, T313.
Cordage yarns, development of a standard bending test for, T300.
Cotton airplane cloth, grade A, C270.
cement sacks, relative merits of jute and, T292.
fabric, asphalt-saturated for waterproofing, specification for, C287.
pillowcases, bleached, C277
sheeting, C278
brown, C272
Cryostat liquids, nonflammable, S520.
Crystal structures of zinc, S522.
Cylindrical surfaces, photographing of, S517.

D

Dahlia, levulose from, S519.
Deformations in hollow-tile walls, T311.
Densities, normal, of gases, literature relating to, S529.
gases, relation between temperatures, pressures and, C279, M71.
Dielectric constant, power factor, and resistivity of rubber and gutta-percha, T299.
Die head chasers, R51.
Differential relay for automatic motor speed control, S511.
Direction finding at high frequencies, S525.
Directory of commodity specifications, M65.
Distance range of radio telephone broadcasting stations, T297.
Divers' hose, C289.
Drain-tile test, T307.
Drawing ink, specification for colored waterproof, C301.

E

Eccentric loading, strength of hollow-tile walls under, T311.
Echo, C300.
Effective inductance of coils, T298.
Effective resistance of coils, T298.
Effects of flints in white-ware bodies, T310.
Electric lines, rural extensions of, M66.
Electric motor, clock controlled, S511.
Electric power stations, safety rules, H6.
Electric utilization equipment, safety rules, H7.
Electrical safety rules, H6, H7.
Electrical workers' rubber gloves, C271.
Electrolytic etching for alloy steels and ferroalloys, S518.
Elevated temperature tests of low-carbon steel at various sustained loads, T296.
Etching methods for alloy steels and ferroalloys, S518.
Etching reagents for alloy steels and ferroalloys, S518.
Exhaust water in airship ballast, T293.
Expansion phenomena in steel during quenching, S513.
thermal, fused silica (fused quartz), S524.
of tungsten, S515.
Exposure machine, photographic (sensitometer), S511.
Exposures, photographic, intermittency effects of, S523.

F

Ferroalloys, etching methods and solutions for, S518.
Felt, asphalt-saturated for flashings, specification for, C286.
Fellowships, research, at the Bureau of Standards, C296.
Fillers, paper, comparative study of, T301.
Finishes for builders' hardware, standard, C275.
Fire clay, U. S. Government master specification for, C298.
brick, C299.
manufacture, properties, uses, and specifications, C282.
U. S. Government master specification for, C299.
Fire-clay refractories, plastic, U S. Government master specification for, C297.
Flashing felt, asphalt-saturated, specification for, C286
Flints (nomenclature), T310.
Floor and roof lights, R49.
Floor slabs, concrete, tests of, T291.
Flow tests, T296.
Forms, commercial, R37.
warehouse, R34.
Fructose, preparation of, S519.
Functions of bureau, C1.
Fuses, H6, H7.

G

Gas, accidents from, appliances, T303.
appliances, causes of accidents from, T302.
testing to determine safety of, T304.
head lamps, C276.
hose, C290.
relation of heating value to usefulness, T290.
service, responsible for carbon monoxide poisoning, M66.

Gases in metals, determination by vacuum fusion, S514.
normal densities of, literature relating to, S529.
relation between temperatures, pressures, and densities of various gases, C279, M71.
Gasoline hose, C269.
Gauge steels, S513.
Glass refraction, S521.
Gloves, rubber, C271.
Granite, permeability of, T305.
Gray sheeting, C272, C278.
Grinding wheels, R45.
Grocers' bags, paper, R42.
Ground-glass test for waterproof paper, T312.
Grounding of electrical circuits and equipment, H6, H7.
Gutta-percha and rubber; dielectric constant, power factor, and resistivity of, T299.
Gypsum products, the technology of the manufacture of, C281.

H

Hardened steel cylinders, axial stresses, S513.
compressional stresses, S513
internal stresses, S513.
permanent stresses, S513.
tensional stresses, S513.
Hardened tool steels, S513.
Hardware specifications, builders', C275.
Hazards from gas appliances, T303, T304.
Headlights on motor vehicles, C276, M68
Heating value of gas, its relation to usefulness, T290.
Hiding power of paint, T306.
High-frequency resistance and inductance, S509, T298.
High-speed steel, etching methods and solutions for, S518.
High temperatures, refraction of glass at, S521.
Hinges, specifications for, C275.
Hose, divers', C289.
gas, C290.
gasoline, C269.
pneumatic, U. S. Government master specification for, C307.
rubber, C289.
steam, C268.
tender (corrugated), C288.
water and wash deck, C291.
water- suction (smooth bore), C292.
Hospital chinaware, R40.
Hydrometers, temperature corrections, for Baumé scale, C295.

I

Ice cream, methods of sale for, M70.
Index of refraction of glass, S521.
Index, subject, of U. S. Government master specifications, M73.
Inductance, T298.
Initial temperature effects in quenching, T295.
Ink, colored waterproof drawing, specification for, C301.
Inquiry forms, R37.
Installation of electric supply stations, safety rules for, H6
Installation of electric utilization equipment, safety rules for, H7
Insulators, electrical properties of rubber and gutta-percha, T299.
Intermittent photographic exposures, effects of, S528.
Internal stresses in hardened steel cylinders, S513
Inulin, hydrolysis of, S519.
Investigation of potters' flints, T310.
Invoice forms, R37.
Iron, determination of gases in, by vacuum fusion, S514.

J

Japan coating, specifications and tests, C275.
Jute cement sacks, relative merits of cotton and, T292.

K

Kilocycle-meter conversion table (chart), M67.

L

Lenses for headlighting devices, C276.
Levulose, preparation of, S519
Life of stressed low-carbon steel at elevated temperatures, T296.
Lightning arresters, installation of, H6.
Lights, sidewalk, floor, and roof, R49.
Lime, shrinkage of, T308.
Limestone, permeability of, T305.
Lines, strain, developed by compressive tests on structural members of the Delaware River Bridge, M72.
Liquids, nonflammable, for cryostats, S520.
Literature, review of the, relating to normal densities of gases, S529
Load-bearing walls, T311.
Load-life relations of low-carbon steel at elevated temperatures, T296.
Loads due to wind, S523.
Locks, specifications for, C275.
Long-time high temperature tests, T296.
Low-carbon steel, relations of short time and long time tension tests at elevated temperatures, T296
stressed at high temperature, T296

M

Magnetic analysis of wire hoisting rope, T315.
Magnetic properties of steel wire effect of wear on, S510
Marble, permeability of, T305.
Mars, S512.
Masonry, T311.
Mass effect on cooling steels, T313.
Mass effects in quenching, T295.
Mass standards, short tests for sets of, S527.
Material, stucco, T308.
Materials, textile, U. S Government general specification for (methods of physical and chemical tests), C293
Matting, rubber, U. S. Government master specification for, C306.
Measurements of the index of refraction of glass at high temperatures, S521.
Measurements, thermal-expansion, S524.
Mercerized cotton airplane cloth, grade A, C270.
Metallographic etching reagents for alloy steels and ferroalloys, S518.

Metals, determination of gases in, by vacuum fusion, S514.
Meter-Kilocycle conversion table (chart), M67.
Methods of determining thermal expansion, S524.
Microconstituents in alloy steels and ferroalloys, S518.
Military work, C1.
Modulus of elasticity of hollow-tile walls, T311.
Molasses, temperature corrections of Baumé hydrometers for, C295.
Molybdenum steel, etching methods and solutions for, S518.
Mortar, strength of, T308, T311.
Motor-vehicle headlighting, C276.

N

Nails, small cut, cut tacks and, R47.
National Conference on Weights and Measures: Report of Eighteenth Conference, 1925, M70.
National directory of commodity specifications. M65.
National Electrical Safety Code, H6, H7.
Nautical instrument, the radio direction finder, S525.
Navigation, use of radio in, S525.
Nickel plating, specifications and tests, C275.
Nondestructive testing by magnetic analysis of wire hoisting rope, T315.
Nonflammable liquids for cryostats, S520.

O

Orange shellac, C302.

P

Packing, waterproof, for transportation, T312.
Paint, hiding power of, T306.
Paper fillers, comparative study of, T301.
Paper grocers' bags, R42.
Paper towels, C294.
Papers, case-lining, T312.
Permanent stresses in hardened steel cylinders, S513.
Permeability of stone, granite, marble, slate, limestone, and sandstone, T305.
Personnel, plant, and publications of the bureau, C1.
Photographic exposures, intermittency effects of S523.
Photography, a special camera for photographing cylindrical surfaces, S517.
Photometer, Martens polarization, T306.
Physical properties of zinc, S522.
Pillowcases, bleached cotton, C277.
Pipe, camera, for photographing, S517.
Planetary temperatures, S512.
Plaster board, gypsum, the manufacture of, C281.
Plastic deformation in tool steel during quenching, S513.
Plastic fire-clay refractories, U. S. Government master specification for, C297.
Plasticity, plaster, T308.
Plug gauges, S513.
Pneumatic hose, U. S. Government master specification for, C307.
Power factor, dielectric constant, and resistivity of rubber and gutta-percha, T299.
Pressures of gases, relation between densities, temperatures, and, C279, M71.
Pressures on structures, wind, S523.
Products, gypsum, the technology of the manufacture, C281.
Propagation of electric waves, S509.
Properties of commercial flints, T310.
Protective arrangement of electrical equipment, H6, H7.
Protective grounding, H6, H7.
Proximity effect, S509.
Public utility valuations and rates, M66.
Purchase order forms, R37.

Q

Quantity units for telephone service, M66.
Quartz, fused, thermal expansion of, S524.
Quenching baths, S513.
Quenching cracks in tool steels, S513.
Quenching curves, T313.
Quenching, effect of initial temperature, T295.
effect of mass, T295.
steel, T313.
steel spheres, rounds and flats, T295.

R

Radio direction finders, S525.
Radio frequency resistance and inductance, T298.
Radio, navigation by, S525.
Rates and valuations of public utility properties. M66.
Reclaimed rubber, comparison with new rubber, T294.
Recommended practice for arrangement of building codes, BH8.
Reflectors for automobile head lamps, C276.
Refraction, index of glass, S521.
Refractories, plastic fire-clay, U. S. Government master specification for, C297.
Relation between the heating value of gas and its usefulness to the customer, T290.
Relation between the temperatures, pressures, and densities of various gases, C279, M71.
Relations of the bureau, C1.
Report (annual) of the Director of the National Bureau of Standards for the fiscal year ended June 30:
1925, M69.
Research, C1.
associates, at the Bureau of Standards, C296.
Resistance, T298.
protective grounds, H6, H7.
Resistivity dielectric constant, power factor, and, of rubber and gutta-percha, T299.
Resistors, shielded, S516.
Reverberation, C300.
Roof lights, R49.
Roofing, slate-surfaced, prepared, specification for, C285.
Rooms, acoustics of, S526.
Rope, wire hoisting, testing by magnetic analysis, T315.
yarns, development of a standard bending test for, T300.
Rubber and gutta-percha, dielectric constant, power factor, and resistivity, T299.

Rubber bands, specification for, C284.
Rubber compounds, wear tests of, T294.
Rubber, effect of reclaimed, T294.
gloves, C271.
hose, gas, C290
matting, U. S. Government master specification for, C306.
metal gasoline hose, C269.
steam hose, C268.
stoppers, U. S. Government master specification for, C308.
tender hose (corrugated), C288.
tubing, U. S. Government master specification for, C305.
water and wash deck hose, C291.
water-suction hose (smooth bore), C292.
Rural electric lines, M66.

S

Sacks, cement, relative merits of cotton and jute, T292.
Safety rules for electrical supply station, H6.
Sand-lime brick, R38.
Sandstone, permeability of, T305.
Scales, heavy-capacity platform, equipment for testing, M70.
Seams, C283.
Sector wheel, construction and calibration, S511.
photographic, intermittency effects, S528.
Sensitometer, nonintermittent, S511.
Sequence etching method for alloy steels, S518.
Sewing, C283.
Shear tests of concrete beams, T314.
Sheeting, C272, C278.
gray, C272, C278.
bleached, C273.
medium and high count, C274.
wide, C273.
Sheets, bleached, C274.
Shellac, orange, C302.
specifications for, C302.
varnish, C303.
Shielded resistor, for voltage transformer testing, S516.
Shingles, slate-surfaced, specification for, C235.
Silica, fused, thermal expansion of, S524.
inversion heat effects in white-ware bodies due to flint, T310.
Sidewalk, floor, and roof lights, R49.
Simplified practice in—
box board thicknesses, R44
commercial forms, R37.
cut tacks and small cut nails, R47.
die head chasers, R51.
grinding wheels, R45.
hospital chinaware, R40.
paper grocers' bags, R42.
sand-lime brick, R38.
sidewalk, floor, and roof lights, R49.
warehouse forms, R34
Sirups, temperature corrections of Baumé hydrometers for, C295.
Size and shape, effect on quenching of steels, T313.
Skin effect, S509.
Slabs, concrete, tests, of, T291.
Slate, permeability of, T305.
Slate-surfaced roofing and shingles, specification for, C235.
Sodium sulphate, action of, in synthetic tanning materials, T 317.
Sound, C300.
absorption of some building materials, S526.
transmission of some building materials, S526.
Specification, case-lining papers, T312.
fire-clay brick, C282.
paper towels, C294.
National Conference on Weights and Measures specifications and tolerances for—
Taximeters, M70.
Vehicle tanks, M70.
National directory of commodity, M65.
Subject index of U. S. Government master, M73.
United States master specifications for—
Asphalt-saturated rag felt for flashings, C286.
Asphalt slate-surfaced prepared roofing and shingles, C235.
Asphalt-Saturated woven cotton fabric for waterproofing, C237.
Bleached cotton pillow cases, C277.
sheets (medium and high count sheeting), C274.
wide cotton sheeting, C273.
Brown cotton sheeting, C272.
wide cotton sheeting, C278.
Builders' hardware, C275.
Colored waterproof drawing ink, C301.
Divers' hose, C289.
Fire clay, C298.
Fire-clay brick, C299.
Gas hose, C290.
Mercerized cotton airplane cloth, grade A, C270.
metal gasoline hose, C269.
Orange flake shellac, C302.
Plastic fire-clay refractories, C297.
Pneumatic hose, C307.
Rubber bands, C284.
Rubber gloves for electrical workers (for use in connection with apparatus on circuits not exceeding 3,000 volts to ground), C271.
Rubber matting, C306.
Rubber stoppers, C308.
Rubber tubing, C305.
Shellac varnish, C303.
Steam hose, C268.
Stitches, seams, and stitching, C283.
Stoppers, rubber, C308.
Tender hose (corrugated), C288.
Textile materials (methods of physical and chemical tests) C293.
Water and wash deck hose, C291.
Water-suction hose (smooth bore), C292.
Standard time in the United States, C280.
Standard time throughout the world, C280.
Standard stitches, C283.
Standards, C1.
paper towels, C294
relation of heating value standards of gas to usefulness, T290.
safety, H6, H7.

Standardization of—
box board thicknesses, R44.
commercial forms, R37.
cut tacks and small cut nails, R47.
die head chasers, R51.
grinding wheels, R45.
hospital chinaware, R40.
paper grocers' bags, R42.
sand-lime brick, R38.
sidewalk, floor, and roof lights, R49
warehouse forms, R34.
Station, electric supply, safety rules for, H6.
Statistical study of conditions affecting distance range of radio telephone broadcasting stations, T297.
Steam hose, C268.
Steel, determination of gases in, by vacuum fusion, S514.
initial temperature effects in quenching, T295.
mass effects in quenching, T295.
quenching of, T313.
Steels, alloy, etching methods and solutions for, S518.
Stitches, C283.
Stitching, C283.
Stone, permeability of, T305.
Storage batteries, installation of, H6.
Strain lines, developed by compressive tests on structural members of the Delaware River Bridge, M72.
Stress generation in cooling glass, S513.
Stresses in hardened tool steels, analysis of, S513.
Structural materials, C300.
Structures, wind pressures on, S523.
Sulphuric acid, absorption of, from synthetic tanning materials containing sodium sulphate, T317.
combination of, with hide substance, T317.
Sugar solutions, temperature corrections of Baumé hydrometers for, C295.
Supply stations, electric, safety rules for, H6.
Switchboards, rules for installation, H6, H7.
Synthetic tanning materials:
analysis of, T316.
containing sodium sulphate, action of, on leather, T317.
destructive action of, on hide substance, T309.
filling power of, T309.
maximum combination of, with hide substance, T309.
maximum fixation of, in hide substance, T309.
optimum conditions for tanning with, T309.
rate of combination of, with hide substance, T309.
rate of fixation of, in hide substance, T309.
solvent action of, on hide substance, T309.
tanning with, T309.
theory of tanning with, T309.

T

Tacks, cut, and small cut nails, R47.
Tanning materials, synthetic, T316.
synthetic (syntans), behavior of, toward hide substance, T309.
Taximeters:
Specifications and tolerances for, M70.
Testing, M70.
Technology of the manufacture of gypsum products, C281.
Telephone protection, H7.
service, quantity units for, M66.
Temperature distribution, cooling glass, S513.
tool steel cylinders during quenching, S513.
Temperature estimates of Mars, S512.
Temperatures of gases, relation between densities, pressures, and, C279, M71.
Tender hose (corrugated), C288.
Tensional stresses in hardened steel cylinders, S513
Test methods, cement sacks, T292.
rope yarns, T300.
Testing, C1.
Testing gas appliances to determine safety of, T304.
Testing, reinforced concrete beams, T314.
Tests of hollow tile and concrete slabs reinforced in one direction, T291.
Tests, short, of laboratory weights S527.
Textile materials, U. S. Government general specification for (methods of physical and chemical tests), C293.
Thermal expansion, apparatus, S524.
effects of white-ware bodies due to flint, T310.
Measurements, fused silica (fused quartz), S524.
tungsten, S515.
Thicknesses of boxboard, R44.
Tile, concrete, C304.
drain, T307.
gypsum, the manufacture of, C281.
hollow, tests of, T291.
walls, compressive and transverse strength of hollow, T311.
Tiles, physical properties of, T311.
Time in foreign countries, C280.
Time signals in the United States, C280.
Time, standard, throughout the world, C280.
temperature cooling curves, T313.
Tires, wearing qualities as influenced by reclaimed rubber, T294.
Tolerances: *See also* Specifications:
National Conference on Weights and Measures tolerances for Bread, M70.
In excess, necessity for, M70.
Towels, paper, C294.
Transformer, instrument, S516
Transformers, voltage, S516.
Transverse strength of hollow-tile walls, T311.
Trip through the bureau, C1.
Tubing, rubber, U. S. Government master specification for, C305.
Tungsten, thermal expansion of, S515.
steel, etching methods and solutions for, S518.

U

Unbleached sheeting, C272, C278.
Units, concrete building, C304.
Utilization equipment, safety rules for electric, H7.

V

Valuations of public utility properties, M66.
Vanadium steel, etching methods and solutions for, S518.
Varnish, Shellac, C303.
Vehicle tanks, specifications and tolerances for, M70
Voltage, transformers, S516.

W

Wall board, gypsum, the manufacture of, C281.
Walls, compressive and transverse strength of hollow-tile, T311.
Warehouse forms, R34.
Water and wash deck hose, C291.
Waterproof papers, T312.
Waterproofed paper, T312.
drawing ink, C301.
Waterproofing cotton fabric, asphalt-saturated, specification for, C287.
Water recovery in air craft, T293.
resistance test of paper, T312.
Water-suction hose (smooth bore), C292.
Wear, effect of on magnetic properties and tensile strength of steel wire, S510.
resistance to, of tire treads as influenced by reclaimed rubber, T294
Weights and measures:
National conference on. *See*, National Conference on Weights and Measures.
Weights, calibration of sets of S527, C3.
laboratory short tests for sets of, S527.
Wheels, grinding, R45.
Wide sheeting, C273.
brown, C278.
Wind pressures on structures, S523.
Wire, effect of wear on magnetic properties and tensile strength of steel, S510.
hoisting rope, testing by magnetic analysis, T315.
Wiring rules, H6, H7.
Wrapping paper, T312.

Y

Yarns, Rope, Development of a Standard Bending Test for, T300.

Z

Zinc, S522.
coatings, specifications and tests, C275.
crystal structure of, S522.
physical properties of, S522.

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